THE IRON AGE

THURSDAY, FEBRUARY 23, 1893.

The Sellers 40-Ton Dock Crane.

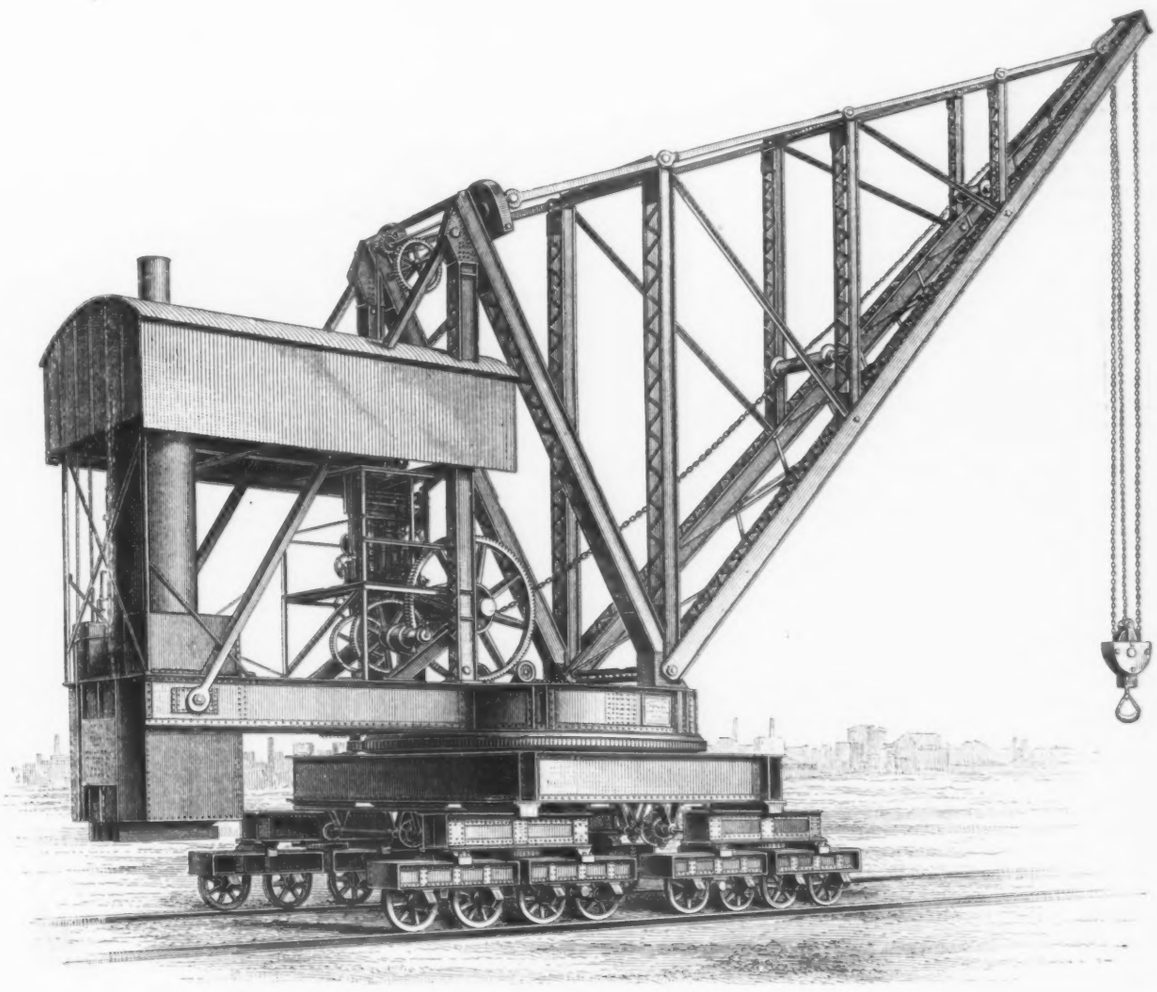
The question of how to most conveniently handle the heavy pieces of armor that are to be placed upon the sides of the new battle ships and armored cruisers has received considerable attention since we started to build a new navy. Heretofore it has not been necessary to handle such heavy weights as are represented by the huge steel slabs that are to be bolted on to the sides of the modern war vessels, and most of the work on the ships has been done while they were lying alongside the dock under the shears. Other factors entered, and the problem was whether to hoist the armor or to lower it. The latter proposition gained the day, and it is now the generally accepted custom to place a vessel in dry dock when she is ready for her protective covering, and keep her there until it is all in place. Naturally, when some of the armor rests on a shelf below the water line, this would have to be done in any event, but the above water plating, as well as that below, is all placed during the time the vessel is in dock, as less time and greater handiness are found to result.

The crane to lift the heavy weights had to be of peculiar construction and it also has to be capable of being readily moved about, as occasion required. In addition, it must be automobile to secure entire independence and be capable at any moment of moving a short or long distance, as the proper adjustment of the plates demands. This, of course, necessitates the building of a special set of tracks around three sides of the dry dock, the fourth side being clear for the ingress and egress of the vessels.

At the navy yards in Brooklyn and Norfolk, these tracks, 18 foot gauge, have been built for some time, and at the former yard a 40-ton crane is in full working order. One of the matters that was quite vexatious at the start was how to turn about the head of the dock without having too sharp a curve for the free movement of the crane. Putting in a slight reverse curve and flaring out the track somewhat more than the rounding of the dock itself was found to be what was needed to secure the free movement of the machine.

The Government proposals for two 40-ton cranes to cost $55,465 and to be erected, one at the Brooklyn Navy Yard and the other at the Norfolk Navy Yard, were bid for over a year ago and the contracts were awarded to William Sellers & Co. (Incorporated) of Philadelphia, who were to furnish materials and labor of every kind for construction, equipment and delivery.

A general idea of the appearance of the traveling crane is shown in the cuts. It has a working capacity of 40 tons at a radius of 50 feet, measured from cente line of the bearing pins of the jib. The crane that is now complete and in satisfactory working order is on the tracks about the new wooden dry dock. It is quite capable of performing the operations of hoisting or lowering, turning and traveling simultaneously or independently. The machinery is so geared that all these motions can be readily reversed without reversing the engines.



THE SELLERS 40-TON DOCK CRANE

The crane is driven by a pair of 8 x 8 inch engines, and the various motions of hoisting and lowering, turning and traversing are obtained by large friction clutches without end thrusts on their shafts, similar to those found in larger cranes. By this method all motions are started, stopped, increased or decreased, as may be desirable, while it brings the crane under most absolute control. Furthermore, the load is automatically sustained at all points by a patent retaining device. The maximum speed of the crane is not less than 50 feet per minute. There are two hoists, one being a slow hoist for heavy weights with a speed of from 5 to 7 feet per minute; the other is a rapid hoist for weights up to 15 tons, with a speed of about three times the former.

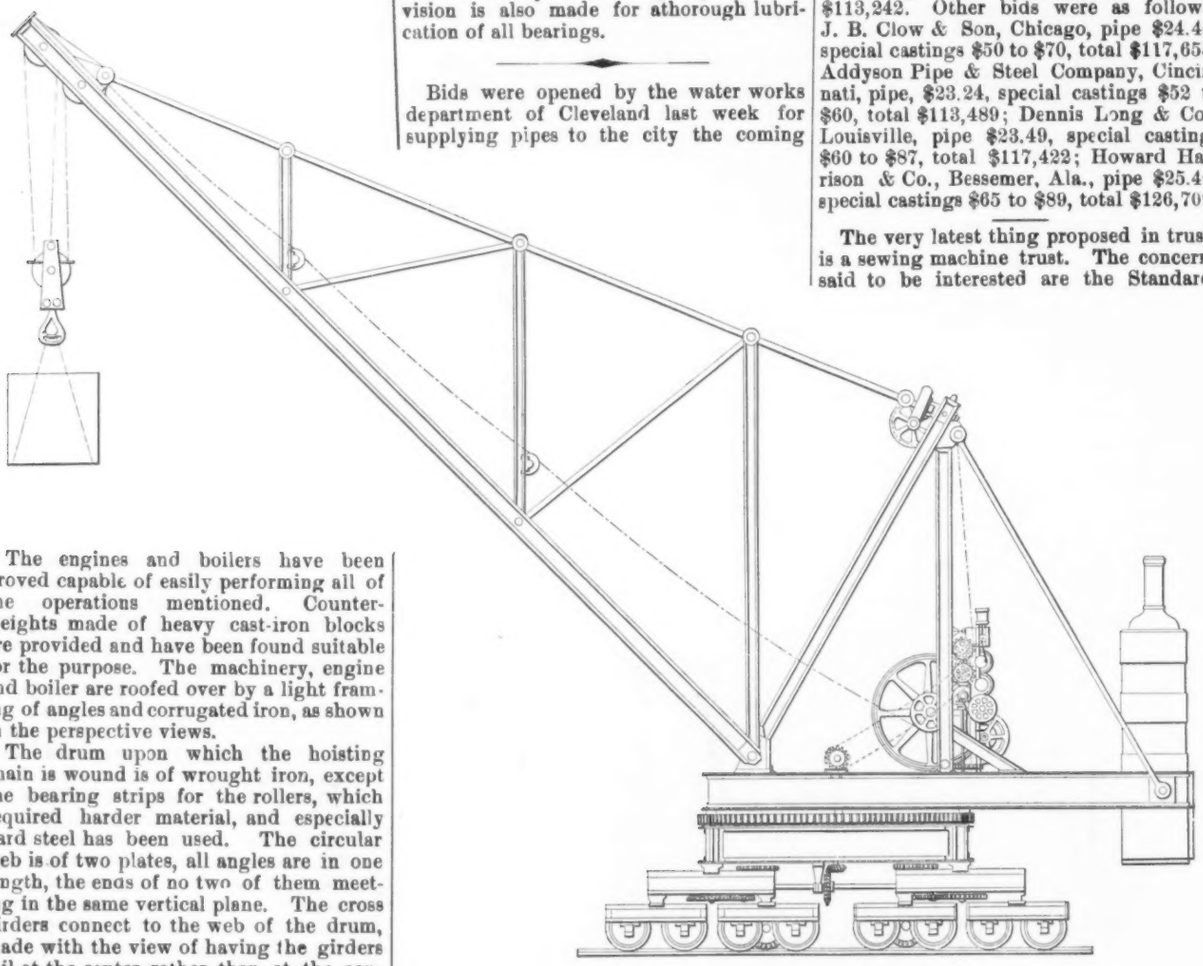


Fig. 2.—Side Elevation.

The engines and boilers have been proved capable of easily performing all of the operations mentioned. Counterweights made of heavy cast-iron blocks are provided and have been found suitable for the purpose. The machinery, engine and boiler are roofed over by a light framing of angles and corrugated iron, as shown in the perspective views.

The drum upon which the hoisting chain is wound is of wrought iron, except the bearing strips for the rollers, which required harder material, and especially hard steel has been used. The circular web is of two plates, all angles are in one length, the ends of no two of them meeting in the same vertical plane. The cross girders connect to the web of the drum, made with the view of having the girders fail at the center rather than at the connection. The orbs of all the cross girders are of one piece. The drum is connected by a hollow cast-steel pin to the car, the pin being capable of revolving with the drum. The lower plates of the drum are $\frac{3}{8}$ inch thick and are riveted to the girder. The drum revolves upon conical hard-steel rollers 15 inches in diameter at the center of the head. They bear upon a bed made up of 1-inch steel plates bolted together in a circle, the plates breaking joints. On the inside and bolted to the roller bed and cover plates of the car is a 6 x 6 x $\frac{5}{8}$ inch angle iron and on the outside the turning rack made of angles and pins. The car is of wrought iron angles and plates, all the webs and girders being in one piece. The car is covered with $\frac{1}{2}$-inch plate and is stiffened under the roller bed with 6 x 6 x $\frac{5}{8}$ inch angles. The wheels are 32-inch diameter and rest in the frame work. They carry compression springs which insure sufficient weight on the driving wheels to travel the crane at all times. The wheels are carried in boxes having brass journals.

The weights are lifted by a chain made of tested links of special $1\frac{3}{8}$-inch round iron welded. The wear of the chain and consequent change of pitch resulting from use, it is thought, will not affect the action of the hoisting machinery to anywhere near the same extent that would have been the case if the original idea of having a sprocket wheel had been carried out. It was at first intended to have a hanging loop of chain at the end of the jib, but that has been dispensed with by interposing a change of speed for the lighter loads as being more convenient. By the arrangement already described, it has been found possible to substitute larger gears of cast iron and steel for the smaller gears, which is considered to be a much more desirable construction. The machinery is grouped so as to afford the greatest possible facility for such examinations and repairs as it may require. Provision is also made for athorough lubrication of all bearings.

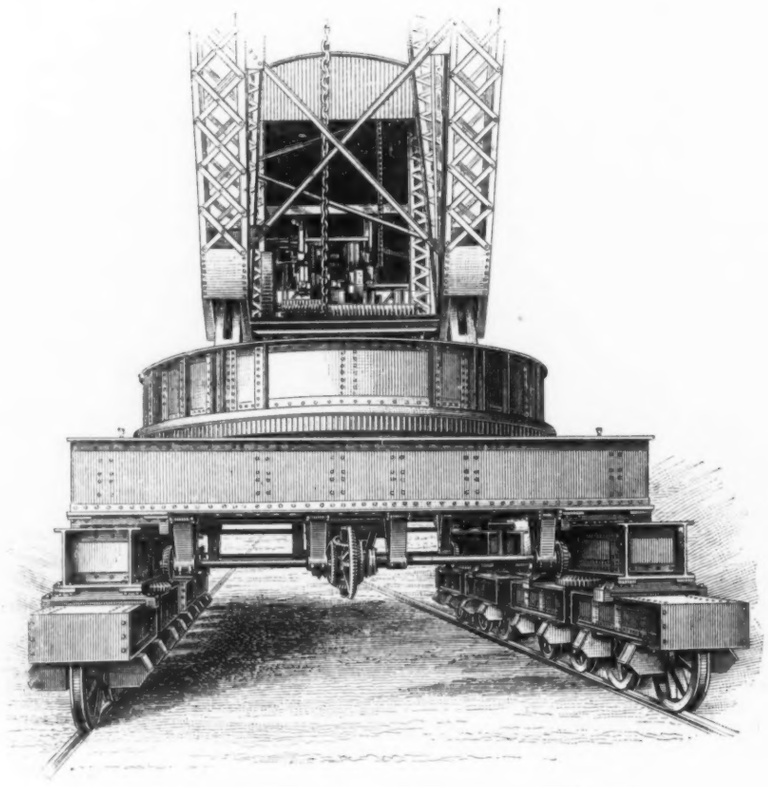


Fig. 3.—Perspective View, Showing Truck Connections.

THE SELLERS 40-TON DOCK CRANE.

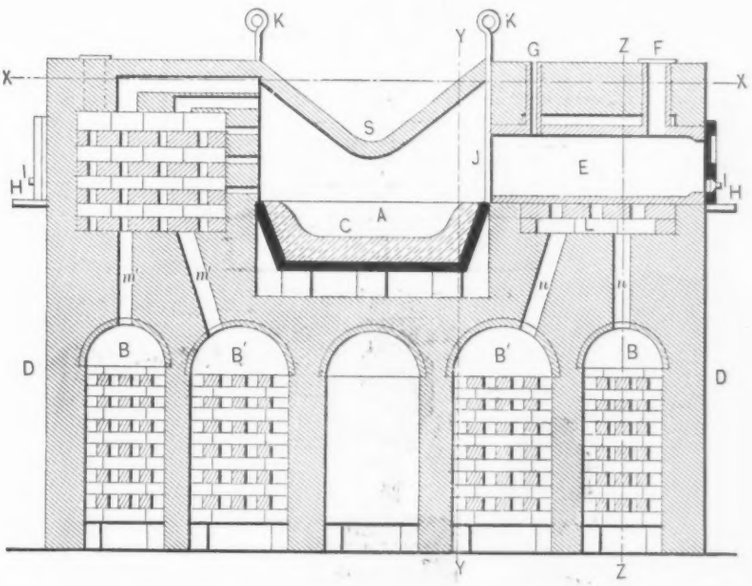
Bids were opened by the water works department of Cleveland last week for supplying pipes to the city the coming year. The lowest bid was submitted by the Lake Shore Foundry Company—$23 10 per ton for ordinary pipe and from $50 to $70 for special castings, making the total $113,242. Other bids were as follows: J. B. Clow & Son, Chicago, pipe $24.40, special castings $50 to $70, total $117,655; Addyson Pipe & Steel Company, Cincinnati, pipe, $23.24, special castings $52 to $60, total $113,489; Dennis Long & Co., Louisville, pipe $23.49, special castings $60 to $87, total $117,422; Howard Harrison & Co., Bessemer, Ala., pipe $25.40, special castings $65 to $89, total $126,709.

The very latest thing proposed in trusts is a sewing machine trust. The concerns said to be interested are the Standard, White, Davis, National, Union, Rockford and Domestic. It is rumored that the combination will have a capital of $15,000,000.

The Conley Process.

N. R. Conley has given years of study to the development of the direct process coupled with the manufacture of open-hearth steel. His last plan, details of which we propose to present, aims at overcoming primarily that bane of all direct methods, the reoxidation of the iron by providing for the quick transfer from the reducing chambers to the bath of the open hearth furnace of the reduced material. He aims to couple with this a reduction of the fuel consumption by utilizing the heat of the furnace for carrying out the deoxidizing of the ore. The accompanying sketch embodies the features of the design.

The open-hearth furnace A may be constructed in general after the manner of the Siemens reverberatory furnace, with its air and gas checker work or regenerator B B and bed or furnace C. The end walls D D of this open-hearth furnace are made thicker or more extended than



THE CONLEY FURNACE FOR THE DIRECT PROCESS.

usual in order to receive and support one or more deoxidizing retorts, E E, made of the shape shown or of any other judged more suitable, and of fire clay or of any other similar material. These retorts are provided with a filling shute, F, and gas outlet pipe, G. Each is also provided with a muffle door opening, N, and small opening, I. Each has also a rear opening, J, opened by a fire-clay slab gate, K. The retorts are surrounded by checker work, L, the object of which will be presently explained, and has air flues, M M, leading from the regenerators B B into the checker work L and through the same into the flues *n n* formed in the masonry above the retorts. The gas and air pass along these flues into the bed of the open-hearth furnace.

The working of the combined furnace is as follows: The retorts are shut off from the bed of the open hearth by the gate K and are then filled with a mixture of ore and carbon through the shutes F, which are instantly closed after filling. The bed of the open-hearth furnace is then prepared in the usual manner with scrap or pig iron to form a molten mass. The gas and air are admitted to the furnace on one side and from the regenerators on that side pass up the flues *m m* into and through the checker work L, out into the flues *n n* and along them into the flues C, where combustion takes place. The waste gases, products of combustion from the furnace C, enter the flues *n n* on the opposite side of the furnace through the checker work L down the flues *m m* into the regenerators B on the opposite side of the open-hearth furnace, or *vice versa*, as the case may be.

The heat of the waste gases is sufficient to heat the retorts to the degree requisite for the deoxidation of the ore contained therein, and this result is facilitated by the checker work around the retorts. By reversing the action of the gas and air retorts on the other side can be heated in a similar manner. When the ore in any of the retorts is properly deoxidized the gate K is lifted and the resulting sponge is discharged in the molten mass in the open hearth C.

The ore, mixed with carbon in the form of coke or charcoal and reduced to a moderately fine state of division, is introduced into a retort heated by the waste gases from an open-hearth furnace and by a simple mechanical operation is, on the completion of the reducing process, discharged into the previously fused bath of pig iron without coming into contact with the air. The aim is to prevent the reoxidation of the reduced metal by contact with atmospheric air and to do away with the delay and expense involved in transferring the reduced metal to another furnace for the open-hearth operations.

Mr. Conley figures the saving through the use of his process as follows:

25 tons iron in 65 per cent. ore, costing 8 cents per unit	$200.00
7 tons fine coke, at $4.	28.00
Extra labor	10.00
Total	$238.00
Loss in reduction to the ingot, 12 per cent., yielding 22 tons steel, or, per ton	$10.82
25 tons iron in pig metal, 10 per cent. less, yielding 20½ tons steel	17.07
Saving	$6.25

Whether such figures could be attained would depend upon the loss. Besides, the sponge should not be pitted against pig iron, but against the much cheaper scrap which it takes the place of.

The report of the West Virginia Inspector of Mines shows that during 1892 8,710,888 tons of coal were mined, giving employment to 15,393 men. For 1891 the production was 8,155,202 tons, produced by 13,023 men. In 1880, when the collection of statistics was begun, the total production was only 1,404,008 tons, employing 3600 miners. The growth of coke making has been fully as rapid, and in 1892 1,313,449 tons were produced from 5490 ovens. In 1891 the production was 1,237,418 tons from 4117 ovens. In 1880 there were 631 ovens producing 121,715 tons. At the close of the fiscal year 1892 there were 777 new ovens in course of construction, all of which are probably by this time producing coke.

The Loop Proposed for Chicago "L" Roads.

Last week formal action toward the organization of a property owners' company for the construction of an elevated terminal loop in Chicago was taken, when articles of incorporation were filed in the office of the Secretary of State by the Central Elevated Railroad Company. The capital stock is placed at $5,000,000 and the following prominent business men and property owners figure among the incorporators: David Kelly, R. H. McCormick, F. C. Wilson, Robert D. Sheppard, William E Hale, George E. Adams, E. R. Bliss, Marshall Field, Cyrus H. McCormick, E. H. Hunt, N. K. Fairbank, A. C. Bartlett, O. S. A. Sprague, Samuel M. Nickerson, Elbridge G. Keith, Lyman J. Gage, Otto Young, N. B. Ream, Edward C. Waller.

The intention of the company is to construct a loop line to traverse the business center, affording terminal facilities and connections for the roads now in operation or building on the south and west sides of the city, and also for one on the north side, which will doubtless be undertaken in the course of time. Property owners have taken up the matter themselves, so as to make the loop as serviceable and yet as little of a nuisance as it is possible to have it.

It is barely possible that the proposed loop line, if built, will be operated by the Elwell-Parker electric system. The Liverpool elevated electric road is operated by this system, and is said to be the first road of its kind in actual use. A center rail is used to carry the current instead of an overhead trolley wire. The road is six miles in length and runs along the docks. Twenty-five trains of two cars each are in use. The cars are built on the American principle and weigh 40 tons. In the central generating station are four 500 horse-power generators. The English company is known as the Elwell Parker Electric Construction Company, Limited, of Wolverhampton and London. A movement is on foot to establish a branch of the company in Chicago, to be known as the Elwell-Parker Electric Construction Company of America.

M. Jacobs of the Columbia Universal Contracting Company has submitted to the company plans for a structure which he says will obviate the objections of property owners to a trestle work in front of their buildings and which can also be built cheaper than the structures now in use. A sketch of the structure shows it to be a double-decked affair, supported on a single row of pillars. On each deck tracks are laid and alongside of these is a walk which connects by foot bridges with the second stories of buildings alongside. The structure is wide enough for a single track only, and it is built entirely of steel and iron. At the end of the line a Y may be built which will enable trains to descend from the upper track to the lower, and *vice versa*. A twenty-foot alley is wide enough for the Y.

After exciting debate the anti-soft coal ordinance was defeated in the Philadelphia Council.

American Turbine Water Wheels.—IV.

BY SAMUEL WEBBER, CHARLESTOWN, N. H.

T. H. Risdon began at the Old Eagle Foundry at Mount Holly, N. J., to improve and experiment on the Vandewater wheel. He tried 2 styles of "fly-trap" cases, 9 kinds of register gates, 5 kinds of gates to close the discharge at the wheel instead of the shutes, 16 kinds of cylinder gates and 8 different kinds of wheel with each of these cases and gates, until he had tried over 200 plans and made about 1000 tests, with a Prony brake and weir, as described in Mr. Francis' hydraulic experiments, finding that a difference of 3° in the angle of the buckets would make 5 per cent. difference in the economy of water. He tried gates inside the shutes and outside, and gates after the water had left the wheel, as shown in *The Iron Age* of December 8, which showed that the gate half closed let out fifteen-sixteenths of the water.

He also made 19 different forms of shutes on the present flanged cylinder gate. The wheel as it now stands, Fig. 15, has been practically unaltered for 20 years, but many improvements have been made in the form of the cases until the present satisfactory plans were attained.

We have followed the growth of the American turbine up to what is practically its best present form, but there are still changes of importance to note.

The Risdon wheel, which the writer first saw and tested at the Centennial Exposition in 1876, may be quoted in illustration of some of the most important of these changes.

Fig. 17 shows the interior concave cone of the Swain brought down to the base of the wheel, so that there is no inward discharge, and the curve of the buckets is such as to give it an outward tendency, which would be aided by the centrifugal force imparted from the wheel. Fig. 16 represents the whole wheel, in its case, showing the gate-hoisting apparatus, with the projecting flanges, or wings, which rise and fall between the guides, and thus keep the current of water smooth and unbroken. The high results obtained by the writer from this wheel, in the table of tests published, have been amply corroborated since by other engineers, as well as by the practical operation of these wheels in actual use in mills, under heads varying from 20 to 50 feet.

A general examination of these cuts shows the long curve of the bucket, and its wider opening, as compared with the earlier wheels.

Soon after 1876 two wheels were put on the market, which are commonly styled "new departure" wheels, in which these changes were carried much further in the direction of larger openings and longer buckets—*i. e.*, the Hercules and Victor wheels—and the great point of both these wheels is the same—*i. e.*, the large amount of water consumed and power delivered by a wheel of moderate diameter.

Our cut, Fig. 18, shows the Victor wheel in and out of its case, and shows the discharge to be outward as well as downward. The gate, not shown here, is a register gate, so called, which revolves partially between the guides and the buckets, with a series of openings corresponding with the guides, of which the edges are beveled in the same direction as the guides, so as not to break the current abruptly. Tests of small wheels of this pattern in the old flume at Holyoke have shown nearly 90 per cent. net effect, and tests of the same wheels with cylinder gate in the new flume show from over 80 per cent. at full gate to 60 per cent. with half water. A table to follow shows the comparative discharge of this and a num-

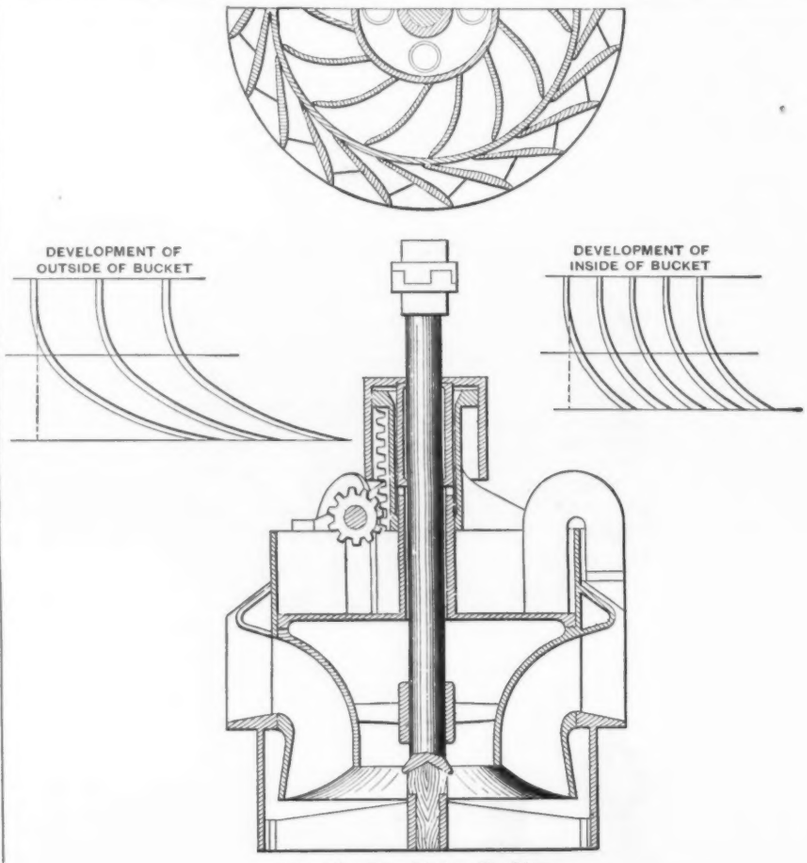


Fig. 15.—The Risdon Turbine.

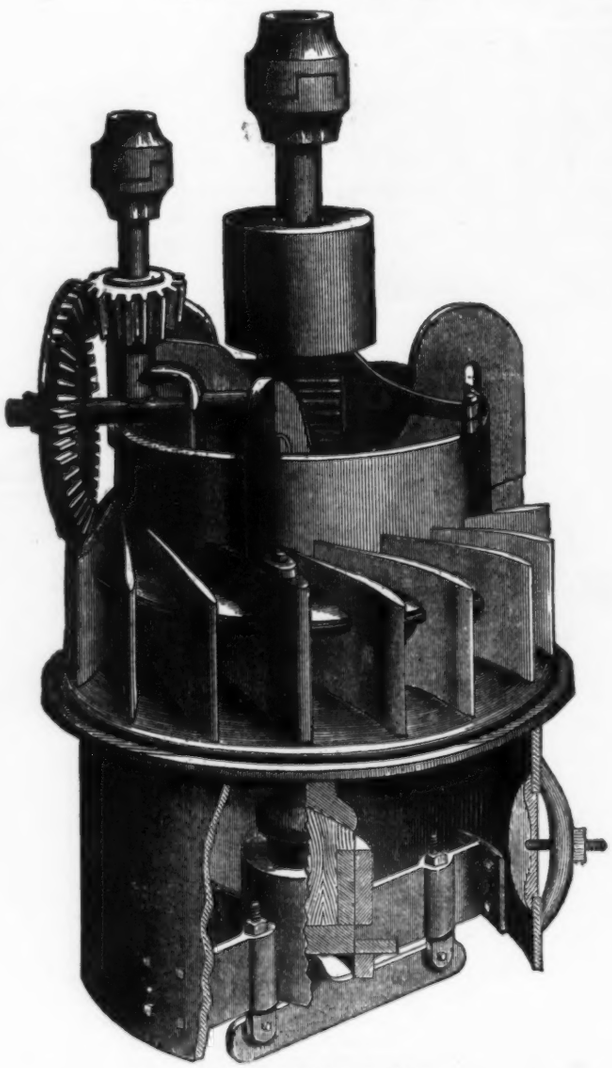


Fig. 16.—Risdon Turbine.

AMERICAN TURBINE WATER WHEELS.

ber of other wheels of equal diameter under the same head.

The Hercules wheel, shown in Fig. 19, is very similar in external appearance to the Victor when in its case, but is a "built" wheel, the buckets being cast singly of iron or bronze, doweled into the crown, cast separately at top and banded and bolted together by a steel ring at the bottom. This wheel also discharges outwardly and has a cylinder gate, but the evil effects of the sharp "cut-off" are in a large degree obviated by the projecting flanges shown on the interior face of the buckets. It will also be noticed that the diameter of this wheel is larger at the bottom than at the top, which is the cause of a wasteful use of water when the gate is fully open, but this is explained by the makers as due to their desire to construct a wheel which should be used at from three quarters to seven-eighths gate opening, and give its highest results at those points, only opening the gate in full when there is obstruction from "back water" and the flow is ample and excessive, when a little waste is of no importance. With these wheels I close my remarks on vertical shaft turbines, as it is impossible to mention them all.

Fig. 17.—The Risdon Wheel.

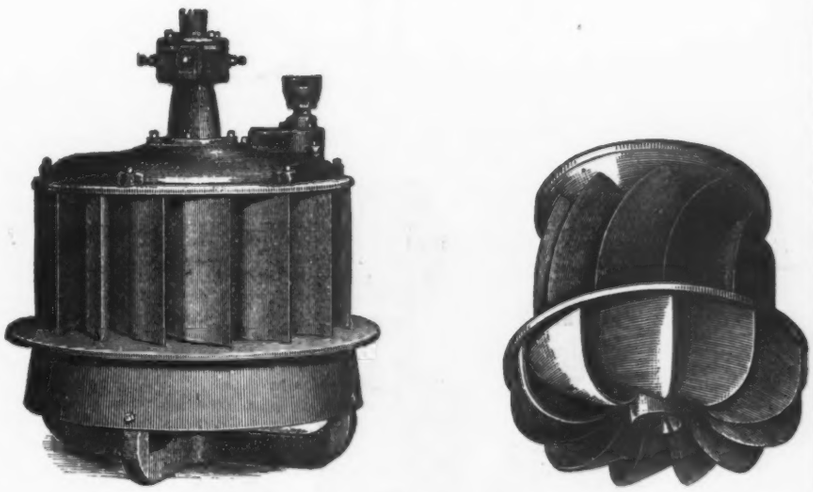


Fig. 18.—Victor Turbine.

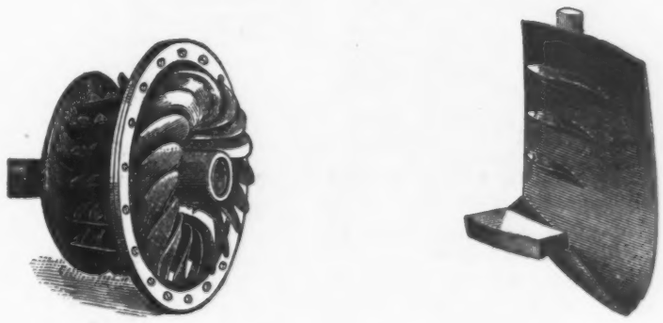


Fig. 19.—Hercules Wheel.

AMERICAN TURBINE WATER WHEELS.

The House Committee on Naval Affairs recommends the construction of only one light-draft gunboat this year, on account of the condition of the Treasury.

The New Armor Specfications.

The new specifications for armor for the navy have been issued after a good many conferences with the steel works. The vessels that it is proposed to supply with armor are the following:

Name.	Description.	Approximate weight of armor.
"Indiana".....	Battle ship..	490.77
"Massachusetts"	Battle ship....	2,041.81
"Oregon"	Battle ship.	490.77
"Olympia," cruiser No. 6.	Protected cruiser.	42.64
"Iowa," seagoing battle ship No. 1.	Battle ship....	2,574.40
"Brooklyn," armored cruiser No. 3....	Armored cruiser..	686.50
Total.....	. ...	6,344.89

Some of the features of the specifications are the following:

Manufacture and Selection.

18. All raw material shall be chemically analyzed in the most approved manner by the contractor before use, and proper records thereof and proper melting records shall be kept by him. The product shall be a uniform alloy of nickel and steel with about 3½ per cent. of nickel. The nickel steel shall be of domestic manufacture by the open-hearth process.

19. The ingot to be used in the manufacture of armor plates shall be so proportioned that its weight shall not be less than double that of the trimmed and finished plate, or if more than one plate is made from an ingot its weight shall be at least double the combined weight of all the trimmed and finished plates made therefrom.

In estimating for the observance of this rule, the calculated weights of the finished plates shall be used. In manufacture, a discard of not less than 30 per cent. of the weight of the ingot shall be made from the upper end.

20. The ingot shall be forged or rolled as much as the best practice requires, but in no case shall the ratio between the mean cross section of the ingot and that of the trimmed and finished plate be less than three. During the process of reduction no metal shall be cut off except such as will clearly have no further beneficial effect on the working of the metal which is to compose the finished plate.

21. Whatever method may be adopted for producing the ingot, the part used must be equal in quality and in all other respects to an ingot cast in the usual way, from which at least 30 per cent. by weight has been discarded from the upper end. In the manufacture of hollow armor forgings, if fluid compressed ingots are used, a discard of not less than 5 per cent. of the weight of the ingot shall be made from the upper end.

Physical Tests.

25. From each plate after forging or rolling and before any further treatment, except annealing, four test specimens shall be taken; one longitudinal and one transverse from each end.

For plates to be treated by the Harvey process, each of these specimens shall show not less than 65,000 pounds tensile strength per square inch and 12 per cent. elongation. For plates not required to be treated by the Harvey process, but which are to be oil tempered and annealed, each specimen shall show not less than 75,000 pounds tensile strength per square inch and 10 per cent. elongation.

Ballistic Tests.

34. The ballistic test is the chief one, and the object of all the other tests of plates is to insure, so far as possible, that the remaining plates of a group are capable of standing as severe a test as that to which the test plate has been subjected; and the conformity required among the plates of a group will be only such as may be necessary for this purpose. The plate from each group intended for the ballistic test will be selected by the Department after all the plates of the group have received their final treatment and passed satisfactory tests for uniformity.

The Department may, however, in its discretion, direct the manufacture of a special plate as to dimensions to be carried through the various stages of manufacture and physical test with certain service plates, and if the chemical and physical tests and treatment of this plate are satisfactory, and compare favorably in uniformity with the designated service plates, after all the latter have been completely treated and tested, it will be selected as the ballistic plate to represent the group of service plates. The ends must be trued.

35. It is supposed that practice in manufacture will eventually produce ingots of such uniformity that the grading of the ingots or plates into groups for ballistic test will be unnecessary, as the variations upon which to grade will be too slight.

40. About the middle line of the plate there will be marked two points of proposed impact, arranged so as to be not less than three and a half calibers of the gun to be used from the upper and lower edges of the plate, not less than three and a half calibers from the ends and not less than three and a half calibers apart.

41. For plates of constant thickness one of the proposed points of impact shall be in the middle line of the plate corresponding to the axis of the ingot, if practicable.

42. For plates tapering in thickness one of the proposed points of impact will be arranged in the thinner part on a line parallel to that upon which the taper commences, and, when practicable, at least one caliber from it. The second point will be placed on the thicker part.

43. The Department may arrange the points of impact near the central region of the lowest portion of the plate, with reference to its position in the ingot; this portion being in length at least one and one-half times the width of the plate; the points of impact being otherwise spaced as directed in Par. 40. In case the points of impact are arranged near the end of a plate, the high velocity shot shall not be delivered at the point near the end.

44. The rules regarding positions of the points of proposed impact are intended as aids in conducting the test with regularity. The guns will be aimed for these points, but no allowance will be made for the ordinary errors inherent to artillery fire.

45. When the proposed point of impact falls upon the tapered part of the test plate, the thickness for which the velocity is to be calculated shall be measured at the thinnest point on the circumference of a circle described around the proposed point of impact, with a radius equal to the semi diameter of the shot.

In the ballistic test for premium, whenever the velocity required by the table exceeds 2050 foot seconds, the next higher caliber of gun will be used with the proper velocity, but in no case shall the caliber of the gun exceed one seventh the width of the plate at the point of impact.

48. The ballistic test shall consist of one shot at one of the proposed points of impact with a comparatively low velocity to determine the resistance of the plate to cracking, and a second shot at the other proposed point of impact with a higher velocity to determine the resistance of the plate to penetration; the caliber of gun used shall be the same for both shots.

52. The following rules shall be observed in making the ballistic tests:

For Nickel Steel Plates, Oil Tempered and Annealed. For Acceptance.

One shot with the velocity established by the Gavre formula for a plate equal in thickness to the plate under test, together with 36 inches of oak backing.

Requirement.—There shall be no crack extending from the point of impact to an edge of the plate, or from one edge to another of the plate, and at the same time through the entire thickness of the plate at an edge.

One shot with the velocity established by the De Marre formula for a plate equal in thickness to the plate under test, together with 36 inches of oak backing, for plates up to 13 inches in thickness; for plates 13 inches thick the velocity shall be that established by the Gavre formula for a plate 31.1 per cent. greater in thickness, together with 36 inches of oak backing; for plates 14 inches thick the velocity shall be that established by the Gavre formula for a plate 28 per cent. greater in thickness, together with 36 inches of oak backing; for plates 15 inches thick the velocity shall be that established by the Gavre formula for a plate 25 per cent. greater in thickness, together with 36 inches of oak backing; and for a plate 16 inches thick and upward the velocity shall be that established by the Gavre formula for a plate 20 per cent. greater in thickness than the plate under test, together with 36 inches of oak backing; provided, that for plates whose thickness includes a fraction of an inch, the velocity shall be obtained by interpolation from the velocities designated for the thickness next above and next below the plate under test.

Requirement.—The projectile, or any fragment thereof, shall not pass entirely through the plate and backing.

For Premium.

One shot with the velocity established by the Gavre formula for a plate 10 per cent. greater in thickness than the plate under test, together with 36 inches of oak backing.

Requirement.—There shall be no crack extending from the point of impact to an edge of the plate, or from one edge to another of the plate, and at the same time through the entire thickness of the plate at an edge.

One shot with the velocity established by the De Marre formula for a plate 15 per cent. greater in thickness than the plate under test, together with 36 inches of oak backing.

Requirement.—The projectile, or any fragment thereof, shall not pass entirely through the plate and backing.

53. The following rules shall be observed in making the ballistic tests:

For Plates Treated by the Harvey Process. For Acceptance.

One shot with the velocity established by the Gavre formula for a plate 10 per cent. greater in thickness than the plate under test, together with 36 inches of oak backing.

Requirement.—There shall be no crack extending from the point of impact to an edge of the plate or from one edge to another of the plate, and at the same time through the entire thickness of the plate at an edge.

One shot with the velocity established by the De Marre formula for a plate 15 per cent. greater in thickness than the plate under test, together with 36 inches of oak backing.

Requirement.—The projectile or any fragment thereof shall not pass entirely through the plate or backing.

54. Table showing approximate velocities which may be used in making ballistic tests, subject to restriction of caliber of gun:

Velocities at Impact, based on Gavre and De Marre Formulas, Modified.

Gun and thickness of plate.	Nickel steel. Acceptance. 1st shot.	Nickel steel. Acceptance. 2d shot.	Nickel steel. Premium. 1st shot.	Nickel steel. Premium. 2d shot.	Nickel steel, Harveyized. Acceptance. 1st shot.	Nickel steel, Harveyized. Acceptance. 2d shot.
4-inch B. L. R.						
4 inches	1421	1561	1491	1676	1491	1676
5 inches	1595	1753	1680	1893	1680	1893
6 inches	1765	1940	....	....	....	....
6-inch B. L. R.						
6 inches	1389	1532	1472	1659	1472	1659
7 inches	1528	1673	1620	1816	1620	1816
8 inches	1659	1809	1762	1968	1762	1968
9 inches	1897	1942	....	....	....	....
10 inches	1912	2073	....	....	....	....
8-inch B. L. R.						
9 inches	1309	1536	1391	1672	1391	1672
10 inches	1400	1637	1491	1786	1491	1786
11 inches	1491	1737	1585	1897	1585	1897
12 inches	1577	1835	1678	2004	1678	2004
13 inches	1661	1930	....	....	....	....
10-inch B. L. R.						
13 inches	1314	1575	1401	1772	1401	1772
14 inches	1381	1630	1472	1859	1472	1859
15 inches	1445	1682	1539	1940	1539	1940
16 inches	1508	1708	1607	2028	1607	2028
12-inch B. L. R.						
16 inches	1269	1436	1353	1787	1353	1787
17 inches	1322	1495	1410	1858	1410	1858
18 inches	1374	1554	1465	1926	1465	1926
13-inch B. L. R.						
18 inches	1256	1422	1340	1810	1340	1810

REMARK.—Velocities for 1st shot for acceptance of nickel steel are for the 4-inch B. L. R., the De Marre reduced 9 per cent.

55. A steel projectile (of the best quality and manufacture, as determined by the Department, and of the general shape as now used) will be fired at each of the two points of proposed impact, under the general conditions before described.

56. After the first shot, if the contractor should so request, the following changes may be made:

When cracks develop, running near the other proposed point of impact, that point may be shifted to such a position as the contractor may select, provided the point is not placed more than 3½ calibers from the center of impact of the preceding shot. The inspector determines the character of the cracks.

57. Firing at a plate will be stopped whenever, in the opinion of the inspector, the plate has demonstrated its incapacity to stand the full test.

58. No plate which does not represent a ballistic group will be tested under the contract, except as hereinafter provided for.

Acceptance and Rejection.

59. Such plates as successfully endure the ballistic test will be paid for by the Department, at the contract price. If they are not shaped, or as carefully finished on the edges or otherwise as a ship plate, a corresponding reduction of price will be made. If unsucesssful, they will not be paid for, nor their transportation; they will be removed from Government ground by the contractor. If not removed within three months from notification, they will become the property of the Government.

60. If the group represented by the successful test plate has shown a close uniformity in quality and treatment, it shall be accepted as far as the ballistic test is concerned.

61. If the test plate should fail to pass, the group shall be rejected. In this case the contractor may demand that another plate of the same group shall be selected by the department and submitted to test.

62. If this plate successfully passes the test the group may be accepted; but if the Department so desires it may select another plate (third) from the group, and on this test the acceptance or rejection of the group will definitely rest.

63. If the plates of a group do not show a close uniformity, or when the treatment has not been strictly uniform, if the first plate subjected to ballistic test passes, the Department may test two more before giving a decision as to acceptance of the group.

64. In case more than one plate is tested (owing to the failure of the previous plates, or to the want of uniformity of the group with the test plates), only a single one, that which passes the group, will be paid for.

65. In case of rejection the contractor must replace the group within a reasonable time, to be stipulated in the contract.

66. After a group of plates is accepted the Department may still test therefrom, ballistically, as many plates as it may desire, and only such as pass will be paid for.

This paragraph will only apply when the Department has reason to believe that there is a lack of uniformity in the accepted group, or that defective plates are contained therein.

67. Plates to replace test plates shall be received or rejected on the judgment of the Department upon their chemical and physical tests, which must be practically uniform with similar tests from the plates of the group; but if such plates are rejected because of supposed lack of effective ballistic resistance, the contractors may demand that they be tested ballistically, and if they pass that test, they will be paid for at the contract price subject to the rebate provided for.

68. The success of the test plates defines the status of the group in a ballistic sense, but does not secure the individual plates from condemnation for causes which seriously impair their resistance, or which are referred to herein as objectionable.

Premium for Increased Ballistic Resistance.

70. If before the selection of a test plate from a ballistic group which has been oil tempered and annealed, the contractor shall offer in writing to submit it to a test corresponding to that established by Par. 52 governing premium, it shall be so tested, and, if successful, a premium will be allowed on the group of $30 per ton.

71. In the ballistic test the caliber of the gun used shall be so restricted that when the gun is fired with service weight of shot a velocity of at least 1250 feet per second (at impact) will be necessary to develop the projectile energy required by the Gavre formula to perforate plate and backing.

73. A plate which has failed to pass its group on the test for premium may be used on the lower test if the contractor should so request.

Tests for Brittleness or Cracks.

74. Plates not much curved may be dropped on a suitable iron plate from a hight of 1 yard in order to test for brittleness and to develop cracks.

The Department recognizes the impracticability of obtaining some of the armor as soon as needed, but it will endeavor to place orders so as to get the armor which will be wanted in the near future as early as practicable, and other armor at or near the dates set forth.

Each contractor for armor under this contract must make deliveries at the average rate of 250 tons per month for the first six months after the first delivery becomes due, and thereafter at the average rate of 300 tons per month.

The first delivery of 250 tons shall be due at the expiration of the fourth full calendar month after placing the first order for armor under this contract.

Penalty for Delay.

137. At the end of each calendar month, the total amount of armor delivered since the placing of the first order under this contract shall be reckoned, and if this amount is less than is due at this time, under the provisions of the preceding paragraph, a penalty of $10 per ton on all armor thus due and not delivered shall be charged against the contractor. Should the total amount of armor delivered at the end of any calendar month be greater than is due at this time, a credit of $10 per ton for this excess of armor delivered shall be allowed the contractor. On the completion of the deliveries of armor under the contract, a balance shall be struck between the amounts thus charged against and credited to the contractor, and if this shows any sum due as a penalty to the Government, this sum shall be charged and collected from any moneys due the contractor from reserve payments or otherwise.

Should the contractor be under obligation to furnish the department armor under a previous contract, deliveries thereunder shall be reckoned, for the purpose of determining the penalties or credits aforesaid, as if they had been made under this contract, and no penalties shall be charged, at any time, if the full amount of armor required by this contract to be delivered at that time shall have been made and delivered under either or both of these contracts; it being understood that the delivery of armor at the rate called for by this contract shall be held to have complied with the requirements of both contracts as to deliveries, provided, however, that deliveries of armor shall be made in accordance with the order established by the Department from time to time.

138. In the case of finished structures requiring to be completed and set up at the contractor's works, armor forming part of such structures shall be reckoned as delivered, for the purpose of determining penalties or credits, so soon as its manufacture has been advanced as far as is practicable prior to the completion and assembling of such structure.

139. In case armor under this contract is required to be treated by the Harvey process, the contractor will be so informed, and he must then at once proceed to establish a sufficient plant for the production of Harveyized armor at the rate set forth in the preceding paragraphs; but in this case the first delivery of 250 tons of Harveyized armor will not be considered due until the end of the sixth full calendar month after the placing of the first order for this armor, and thereafter the rate of delivery and the system of penalties and credits provided for in the preceding paragraph for ordinary armor shall be required in the same way for Harveyized armor.

No penalty shall accrue against the contractor for delay in delivery caused by the Department or its agents.

140. In the ballistic test for acceptance it is not the intention that the tests shall be so severe as to subject to rejection armor which has been carefully and skillfully manufactured in accordance with the requirements. If the Department has reason to believe that the tests as prescribed are unduly severe and will operate so as to cause the rejection of armor of the character described, they will be modified to such a degree as the Department shall deem advisable.

Notwithstanding repeated denials, signs are multiplying that railroad switchmen at Chicago are preparing to insist upon an increase of wages about the time that the World's Fair is in progress.

Lamination in Metal.

Some new light upon this subject has been supplied by recent investigations of Prof. John Tyndall upon the subject of cleavage, as it occurs in crystals, rocks, ice and other bodies; and his studies lead inevitably to the conclusion that lamination results from the operation of the same laws under analogous conditions as those which produce the property known in mineralogy and crystallography as cleavage.

At first, one would suppose wax, or bakers' dough, to be most unlikely substances wherein to detect any tendency to cleavage; yet it is precisely with these materials, wherein plasticity is a most prominent physical property, that Professor Tyndall has performed experiments that are commanding the attention of the scientific world, and the results of which have an important bearing upon metallic processes. In these plastic materials and others, such as clay and graphite, Professor Tyndall has proved that cleavage may be developed in as marked a degree as in slate—even the varieties of the latter used for roofing—by the simple application of pressure to the plastic mass. Cakes of wax that have been thus treated are easily split up into regular laminæ, so uniform in character as to excite the surprise and admiration of those who have witnessed the experiments.

These researches appear to have proved that any material, no matter how plastic or how homogeneous it may appear to be, has within it the condition for the development of cleavage, and that the only external condition necessary to produce lamination is a sufficient degree of pressure exerted in one direction upon the mass. The resulting planes of cleavage will be at right angles with the direction in which the pressure is applied. The philosophy of this effect lies in the fact that, as relates to the cohesion of its particles, no substance is strictly homogeneous; that is to say, the particles, granules, or molecules of substances do not possess cohesive power equally in all directions; and hence, when pressure is applied to them, they slide over each other (the sliding surfaces being those of least cohesive power) and move toward a point of less pressure. In the case wherein pressure is applied in one direction only, the sliding will be in a direction at right angles with the direction of the pressure, and thus plates, laminæ or strata are generated in the mass, the limiting faces of these layers having less cohesion than their interior parts.

It is thus that under the action of the rolling pin flaky pie-crust is formed. The same kind of stratification is formed in a biscuit, while in bread, the loaves of which are shaped by kneading, this stratification is absent, and a fibrous structure —called by bakers the "pile"—results from the difference in the manipulation. It is entirely indifferent what kind of material is thus operated upon, provided that it will in some degree yield to pressure without crushing into powder; the result of pressure exerted in one direction more than in any other will result in lamination more or less marked.

A practical illustration of this kind of action is found in iron and other metals. When iron undergoes the ordinary process of rolling it is taken at a welding heat from the furnace, and the uniformly distributed heat weakens the cohesive power of the particles quite equally throughout the mass; the result is a fairly homogeneous bar or plate. However, in bars the tendency to longitudinal stratification is manifest, and when the bars are cold and cohesion has again been restored to its normal power it can always be found that iron so produced is stronger longitudinally than laterally.

Here, then, exists precisely the internal condition for lamination. Let this bar be passed, without again heating it, through plain rolls that allow it to yield laterally while reducing its thickness and stratification would immediately result, provided the rolls exert a sufficiently powerful pressure. Successively applied light pressures would ultimately produce a like result.

Professor Tyndall thinks that when iron is taken hot from furnaces, as for rolling, it is "more or less spongy and nodular," but that in the rolling process these nodules are drawn out into fibers. This view can only be explained by the hypothesis of want of uniformity in cohesion; that is to say, if nodules exist, cohesion in the interior of such nodules must be less than on their exteriors, and this leads logically to the conclusion that fibers instead of plates are formed in the bars, because pressure is exerted in two directions, one of which is at right angles with the other.

The lamination of rails under the action of car wheels results from the lateral sliding of the particles under repeated pressures, the sliding being upon surfaces of least cohesion and in the direction of least resistance. Such lamination may result while either forging of rolling iron or steel when the presence of a foreign substance in the metal tends to create inequalities of cohesion.

The principles which thus appear very clearly to govern lamination also explain the reason why drawing metal through dies increases tensile strength so largely, as in the manufacture of iron and steel wire. The effect of the operation of wire drawing is to arrange the sides of molecules having greater cohesive force in such manner that they lie transversely with reference to the longitudinal axis of the wire, and in this position, to which the repeated drawing and annealing finally brings the molecules, the breaking of the wire under strain is opposed by the maximum cohesion of all the particles.

J. A. Fay & Egan Company.

The consolidation of the firms of J. A. Fay & Co. and the Egan Company, both of Cincinnati, Ohio, has been announced, and the officers of the new J. A. Fay & Egan Company will take charge about March 1. The successful bringing together of these two rival concerns may be regarded as an important move, since it makes the new company the largest manufacturers of wood-working machinery in the country. The two plants occupy squares on the opposite sides of the street, and are therefore especially well fitted for being united under one management.

The directors of the new company will be Thomas P. Egan, Frederick Danner, W. H. Doane, D. L. Lyon, David Jones, W. P. Anderson, Joseph Rawson, S. P. Egan and Edwin Ruthven. Thomas P. Egan will be president, Frederick Danner vice-president, S. P. Egan superintendent and Edwin Ruthven secretary. These four officers are of the Egan Company.

The Egan Company date from 1873, when Thomas Egan, with two partners, started in a small way. A stock company was formed in 1880, and the business proved so successful under able management that additional factories were built, until now the plant covers an entire block, and employs 800 men.

The original J. A. Fay & Co. were established in Keene, N. H., about 1835. In 1850 a branch was established in Cincinnati to meet the demands of the Western trade and to save the expense of transportation. In 1860 not more than 15 men were employed in the works, while now there are over 500. This plant also covers a square block of ground.

The consolidation will not affect the working of the two establishments in the least, and the amount of product and the number of men employed will not be reduced. They will be in position to fit out a wood-working establishment entire with machinery of their own manufacture.

Rope Transmission of Power.

From the "Proceedings" of the semi-annual meeting of the New England Cotton Manufacturers' Association, held at Boston in October last, we take the following article by Stephen Greene of Boston, which was presented in answer to the topic, "What is the best design for line shafting, transmitting over 50 horse-power, permitting stopping and starting on any floor without interfering with the motor or with other shafting?"

I wish to say in the beginning that I would like to alter the wording of the topic. It would seem to border on presumption for me to say anything on the topic worded exactly as it is. I don't like to speak about the best design for transmitting power; I would prefer to call the topic a design, not the best. I have thought also it would please the members of the association better for me to say what I have to say, and present a sketch of what I would illustrate, rather than read a paper. So I shall present this drawing, which is prepared for the actual case of a mill transmitting about 1000 horse-power, and present it as an illustration of transmitting the power into various rooms.

Fig. 2 represents a transverse section through a rope tower, showing the transmission of power from the main fly-wheel of the engine to the head lines of the main shafts in the various rooms. These head shafts are carried on steel beams which are built into the brick work of the belt tower, and are shown by longitudinal section, Fig. 1. This longitudinal section gives the position of the shafts with relation to these beams. The shafts are carried by pillow block bearings, and extend through thimbles in the wall into the main room. There is no great improvement in that over what is employed in any of our first class mills.

The simple device I suggest is to place on the shaft, just outside the rope-tower wall in the main room, a friction cut-off coupling. I do not propose to discuss the merits of the various kinds of friction cut-off couplings. I suppose all of you have

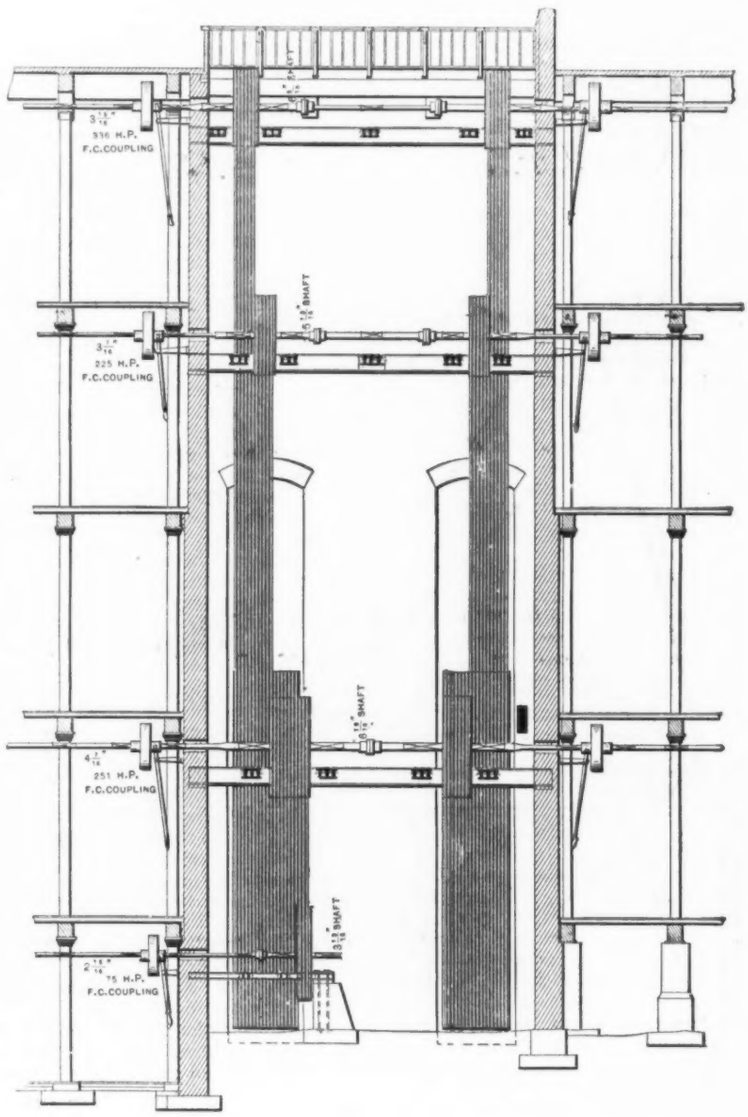


Fig. 1.—Section Parallel with Shafts.

ROPE TRANSMISSION OF POWER.

any number of circulars setting forth the merits of these various couplings; but any good friction cut-off coupling can be placed in the main line of shafting, with a lever extending down within reach, possibly not of a man standing on the floor, but by going up a few steps it could be reached. Then, having that so arranged, it could be operated in stopping or starting the shafting in each room. This could be applied at any of the other lines of shafting. In this drawing, the rope drive shown was arranged for a possible extension of the mill. The drive shown in Fig. 2 is the one first used. The belt tower, in the event of an extension of the mill, is large enough, and space in the engine room is provided for another tandem compound engine.

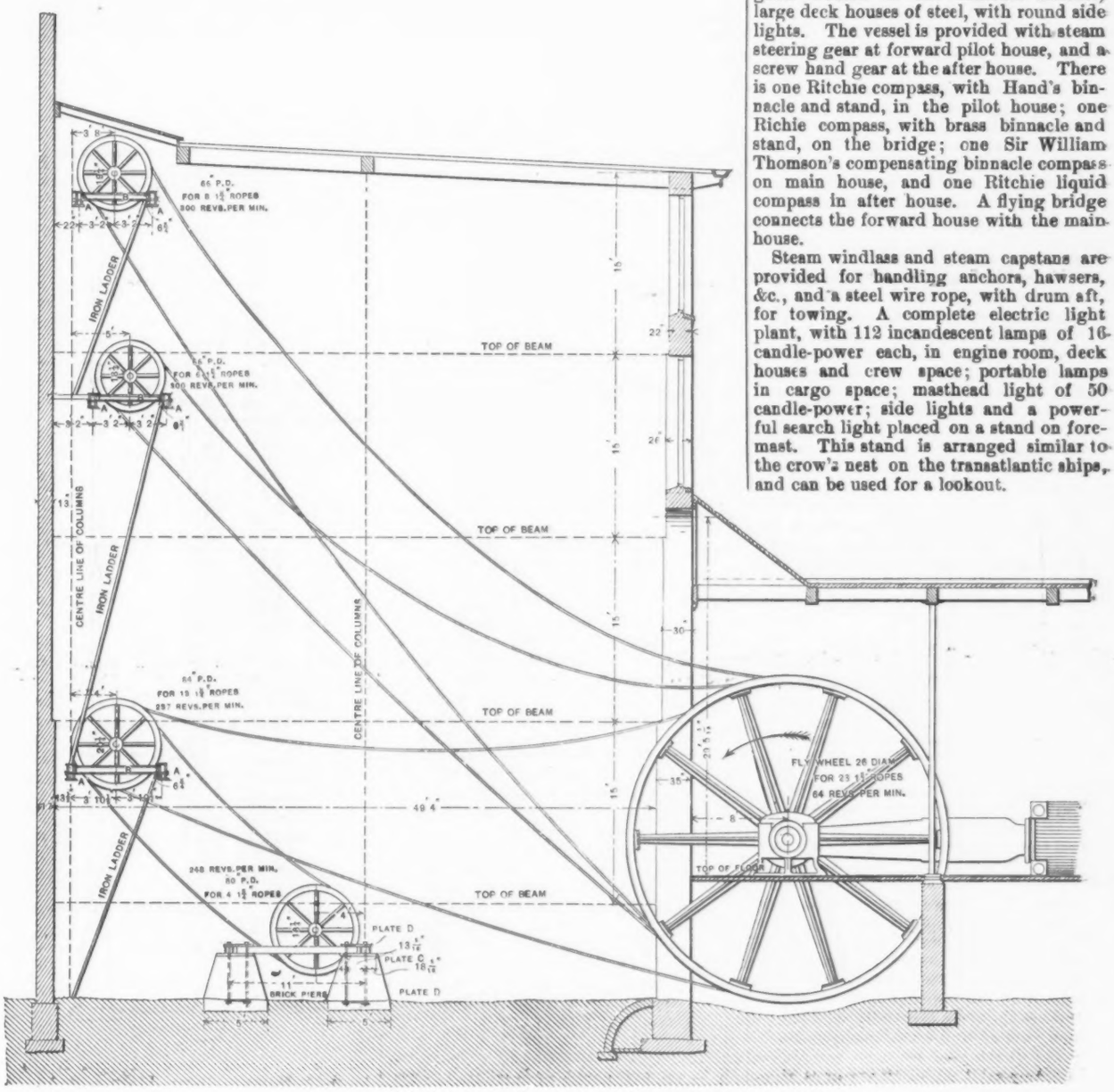


Fig. 2.—Section at Right Angles with Shafts.

ROPE TRANSMISSION OF POWER.

In the death of Captain Elihu Spicer, one of the founders of the Mallory Steamship Company, New York loses an estimable citizen, long identified with commercial affairs at this port. He was born in Noank, Conn., and was in his sixty-eighth year.

The Trial Trip of the "El Rio."

On Wednesday, the 15th inst., the steel freight steamer "El Rio," built for the Southern Pacific Company by the Newport News Shipbuilding & Dry Dock Company, under the superintendence of Horace See, made her trial trip. The boat left her dock at the foot of North Moore street, New York, at 11 o'clock, and made a four and a half hour run through the Narrows to a point about opposite Long Branch. The boat is fitted in a superior manner throughout, and is provided with all the appliances essential to safety and for the quick and economical handling of freight. Although she ran practically empty and at an average speed of about 16 knots, there was a most notable freedom from vibration. Her principal dimensions are:

	Feet.	Inches.
Length over all	406	0
Length between stem and propeller post	380	8½
Breadth molded	48	0
Depth molded to awning deck	33	9

	Tons.
Gross tonnage	4664.68
Net tonnage	2905.48

The hull is built of steel throughout, the outside plating having vertical lap joints below the water line.

She has three continuous decks and a partial orlop deck at forward end of forehold. She is rigged with two steel pole masts and necessary booms for handling cargo, together with steam hoisting engines located at the different hatches, large deck houses of steel, with round side lights. The vessel is provided with steam steering gear at forward pilot house, and a screw hand gear at the after house. There is one Ritchie compass, with Hand's binnacle and stand, in the pilot house; one Richie compass, with brass binnacle and stand, on the bridge; one Sir William Thomson's compensating binnacle compass on main house, and one Ritchie liquid compass in after house. A flying bridge connects the forward house with the main house.

Steam windlass and steam capstans are provided for handling anchors, hawsers, &c., and a steel wire rope, with drum aft, for towing. A complete electric light plant, with 112 incandescent lamps of 16 candle-power each, in engine room, deck houses and crew space; portable lamps in cargo space; masthead light of 50 candle-power; side lights and a powerful search light placed on a stand on foremast. This stand is arranged similar to the crow's nest on the transatlantic ships, and can be used for a lookout.

The engine is of the triple-expansion type, cylinders 32, 52 and 84 inches diameter, 54 inches stroke. The distribution of steam in the high-pressure cylinder is controlled by one piston valve, another valve of the same type performs a similar duty for the intermediate cylinder, and two piston valves are used for the low-pressure cylinder. The steam is introduced in the middle of each valve, which prevents the high-pressure steam from coming in contact with the valve-stem stuffing boxes. All are worked by the See-Marshall valve gear, and each valve receives its motion from a separate eccentric; the valves are placed as close as possible to their respective cylinders. In the high-pressure and

intermediate valve gear, levers are introduced and connected to the valve stem and valve gear in such a manner as to cause the weight of the valve to counterbalance the weight of the connections below the lever, thereby dispensing with counterbalancing cylinders. The engines are reversed by steam.

The main pistons are provided with Mr. See's patent adjustable followers, which permit of adjustment to compensate for wear and of centering without the employment of tail rods, and will at the same time insure a steam-tight piston without undue friction. The piston rods for the "El Rio" are 7½ inches diameter; these and the valve stems are fitted with metallic packing. The crank shaft is 16½ inches diameter; crank pins, 16½ inches diameter by 16½ inches long; cross-head pins, 8 inches diameter, 9½ inches long. The shaft is fitted with Smith's adjustable thrust bearing, consisting of go-ahead and backing bearings. The air pump, single acting, is 32 inches diameter; stroke, 25 inches. Total cooling surface in condenser is 6400 square feet. An independent centrifugal circulating pump is connected to the condenser, sea bilge and ballast tank.

Steam is furnished by three double-ended boilers 13 feet 10 inches diameter and 20½ feet long. Each contains six corrugated furnaces 43 inches inside diameter. Total grate surface, 400 square feet; total heating surface, 10,650 square feet; working steam pressure, 165 pounds. The propeller is a built-up one with four blades; it is 18 feet diameter, pitch 22 feet, true screw.

The machinery of the "El Rio" is a duplicate of that fitted in the steamers "El Sud" and "El Norte," built last year by the Newport News Shipbuilding & Dry Dock Company for the Southern Pacific Company.

The ashes from the fire room are discharged above the water line by the See hydro-pneumatic ash ejector. By this method the decks are not soiled and no dust or noise disturb the passengers.

The "El Rio" will ply between New York and New Orleans.

Expanded metal is steadily gaining ground among consumers. Thus there are now in use around the principal buildings of the Columbian Exposition 25 miles of expanded metal railing, which at the close of the fair may be disposed of to advantage. Recently a wide use for the same article has been found in making partitions in large modern structures to take the place of wood. Among the latest contracts placed for expanded metal ceiling is one for 52,000 yards for the new Leland hotel, the "View," at Chicago.

The Aerated Fuel Company of Springfield, Mass., announce to the trade that in their suits against the Cox & Sons Company, the Woodbury Glass Company and the Cohansy Glass Mfg. Company, the Circuit Court of the United States, speaking through Justice Acheson, has rendered decision in their favor. The suits to which reference is made were brought under the Bullard patent of February 5, 1889, which covers all apparatus for burning hydrocarbon liquid in the presence of compressed air when the liquid and the compressed air are supplied to the burner through separate conduits and the degree of compression of the air is automatically regulated. They state that all those who will, upon receiving notice, promptly report the extent of any infringement of which they may have been guilty, particularly the numbers of burners used in their plants under their system, most particularly the numbers of burners furnished by Cox & Sons Company and other manufacturers of infringing ware, and who will meet them in an effort to adjust the claims for damages, will find the company ready to meet them in the most conciliatory spirit.

The Submarine Cable Systems of the World.

An interesting analysis of the submarine telegraph cable systems of the world is given in a paper submitted last year to the French Société des Ingenieurs Civils, by Ernest Vlasto, who has been identified with important movements through which a considerable impetus has recently been given to the submarine cable industry in France. Of these cables, having a length, taken collectively, of considerably over 100,000 nautical miles, by far the greater part have hitherto been owned by powerful English companies, who succeeded in many countries in securing exclusive rights for a long term of years. In a number of cases the period for which such privileges were granted will expire within the next few years. Taking a general view of the principal cable systems of the globe, without dwelling upon branches of secondary importance, the following classification may be adopted:

1. The North Atlantic system, which comprises competing cables belonging to several different companies, the result being a lower tariff than is found elsewhere.

2. The system of the Eastern and of the Eastern Extension, Australasia & China companies, the importance of which to British interests is very great in giving rapid and direct communication with India and the East. These lines have therefore been greatly favored by the English Government. Leaving England, the system passes, nearly always with two cables to provide against accidents, by way of Gibraltar and Malta through the Mediterranean, connecting in passing with the system of the Adriatic, the Black Sea and the Archipelago, and touching at Egypt. Traversing the Red Sea, it arrives at Aden and thence extends to Bombay, connecting with the land lines of India. From Aden a branch follows the east coast of Africa, touching at Zanzibar, Mozambique and Natal, this line being in the hands of the Eastern & South African Telegraph Company. From Madras the Eastern Extension, Australasia & China Telegraph Company connect with Saigon and China and Japan, while another branch belonging to the same company extends from Singapore to Australia. This system is practically without competition except on the part of unreliable land lines traversing Turkey, Persia and Afghanistan, the use of which is apt to result in delays too great to be compensated for by the lower scale of charges.

3. The system of the west coast of Africa. This includes the cables of two companies: the West African Telegraph Company, connecting Dakar and Loanda, and the African Direct Telegraph Company, connecting the preceding with the Cape Verde Islands and with the main lines between Madeira and Europe.

4. The system of the South Atlantic. Here the Brazilian Submarine Telegraph Company join Lisbon with South America, and the Western & Brazilian Telegraph Company present what is practically a continuation of the former along the coast of Brazil. A new cable which connects with European lines has been laid very recently between Pernambuco and Senegal.

Another line referred to by M. Vlasto in dealing with a different phase of his subject, but which may be mentioned in this connection, is the one which now affords a service between New York and Brazil by the West Indies route, doing away with the necessity for sending such messages by way of Europe, or else by way of the west coast of South America to Valparaiso and thence across the continent, it having formerly been necessary to follow one of those two routes.

5. The South Pacific system, in which the Central & South American Company and the West Coast of America Telegraph Company compete with land lines.

6. The system of the West Indies, where three companies, the Cuba Submarine Telegraph Company, the Mexican Telegraph Company, and the West India & Panama Telegraph Company, formerly had a monopoly which for a long time was successful in preventing direct connection between North and South America, owing to restrictive concessions. To this system were afterwards added cables belonging to the Société Française des Télégraphes Sous-Marins, now forming part of the New York and Brazil route already referred to, but without any outlet at first, either to the United States or to Europe. Privileges were conceded by Brazil in 1890, however, and an exclusive concession was granted this company in 1892 to effect a cable landing at the Azores, and it is proposed to join Lisbon and the West Indies by this route.

Taking advantage of other sources of information, and turning now to the manufacture and laying of submarine cables, this too is found to be almost entirely in the hands of English corporations. Some manufacturing is done in France, where it is probable that there will soon be a largely increased output. There is a manufacturing establishment in Germany for cable work, and there is an important one in Italy, but the latter is devoted almost exclusively to Government work.

There are 38 steamers engaged in cable work, ranging in size from 300 tons to 5000 tons, with a total tonnage of nearly 60,000 tons. Two of these steamers belong to the French Government, two to the British Government, and the Italian, Indian, Canadian and Chinese governments each have one. Nearly all the others belong to private English companies. One is under the United States flag but was built in Great Britain.

Statistics published last year by the International Telegraph Bureau of Berne showed a little more than 140,000 nautical miles of submarine cables in service, representing a capital of about $225,000,000. The share of this accredited to private corporations is in round numbers $200,000,000, the rest being invested in government cables.

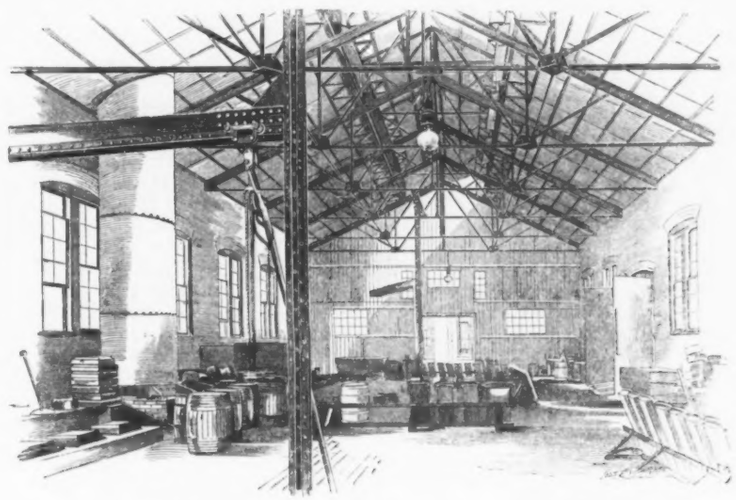
Various projects have been under discussion from time to time, having in view the laying of submarine telegraph cables across the Pacific Ocean to afford communication by this route between North America, Hawaii, China, Japan and Australasia, and it is probable that definite action will be taken in this direction in the near future. These projects need not be considered here, however, the present purpose having been to deal more particularly with existing systems and with work already accomplished.

The American oil trade in China is being hard pushed by the Russian product, but thus far holds its own on account of superior quality, as prices are nearly the same. Of importations amounting to nearly 50,000,000 gallons in 1891 four-fifths were American.

The California Legislature has passed a bill appropriating $100,000 for the maintenance of a nautical school at San Francisco. Graduates of the school, it is expected, will obtain positions as junior officers in the merchant marine on the Pacific Coast.

A New Brass Foundry.

The construction of foundry buildings is receiving at the present time a great deal of attention from manufacturers. It is especially the case in brass foundries, where the cost of producing the finished metal is considerable. The accompanying illustration shows the interior of a new brass foundry just completed for Randolph & Clowes, at Waterbury, Conn., which was designed and built by the Berlin Iron Bridge Company of East Berlin, Conn. The building is 42 feet in width by 85 feet in length, the side walls being of brick and the roof being of iron covered with the Berlin Company's patent anti-condensation corrugated iron roof covering. A drop of water in a brass foundry would be fatal, and for this reason manufacturers have not been able to use corrugated iron roofs in the past, owing to the drip from the under side of the corrugated iron. The Berlin Company's patent anti-condensation



THE RANDOLPH & CLOWES BRASS FOUNDRY.

corrugated iron material has met this trouble, and they are now able to produce a corrugated iron roof which they guarantee will not condense moisture on the under side, and at the same time will be fire proof. They have furnished a large number of these for electric light stations, brass foundries, &c, some having been in use for several years. The building as shown is ventilated on the ridge by one of the Berlin Company's ventilators with corrugated iron shutters on the sides, which open and close separately and independently, and thus affording ample ventilation in all kinds of wind and weather. The interior arrangements of this casting shop are only indicated in the engraving, the idea being to show more particularly the roof trusses and the general construction of the building.

The ministerial organ in Toronto favors "a wide measure of reciprocity with the United States, to include manufactures," which indicates that the Government are coming into agreement with the opposition, so far as concerns tariff questions. The Government will submit a new tariff at the next session of Parliament.

The statement is made, without qualification, that three New York banking houses received $400,000 each from the Panama Canal Company for acting as members of the "American Committee;" $1,200,000 was divided among them in money, and one man got a salary of $24,000. Altogether there was disbursed in New York about $40,000,000 of the Panama Company's funds.

WORLD'S FAIR NOTES.

Withdrawals of Exhibitors.

More interest is now being taken in the stories current of the wholesale withdrawal of exhibitors than in any other subject connected with the exposition. These have been published in a way to convey the impression that general dissatisfaction exists with the allotment of space, the proposed system of awards, the regulations governing the installation of exhibits, &c. If these stories were but half true the public would be justified in believing that the exposition is on the eve of a flat failure. The troubles which have arisen, however, are greatly exaggerated. Prominent piano manufacturers have announced that they intended to make no exhibit, as they object to the system of awards which has been adopted, but other applicants for their space are so numerous that the piano manufacturing industry will certainly be well represented. It is a question whether the dissatisfied manufacturers will not injure themselves by the course they have taken. As to other cases of dissatisfaction these do not seem to cover exhibitors by classes, but only individuals. The writer has had occasion the past week to investigate a number of them. A few of the results of his investigations will be given.

A large manufacturer of machinery, who determined that he would not complete arrangements for an exhibit, stated that he had been refused adequate space. He had applied for 4000 square feet and was allotted but 3000, which was altogether too small. In explanation of this case, Chief Robinson of the Machinery Department points out that the entire space reserved for domestic machinery comprises 220,000 square feet, of which 20,000 feet will be needed for passages, leaving 200,000 feet for exhibits. The largest machinery manufacturers have been awarded 3000 square feet. This would divide the entire space among only 66 exhibitors, but fortunately all applicants were not equally prominent, there being some 1300 in all. The others have been able to secure space by reducing individual allotments as much as possible. It is regrettable that any prominent manufacturer should elect to be absent from this great display of American machinery products, but it is hard to see how more space than that assigned could have been granted without doing very great injustice to other deserving applicants.

Some manufacturers state that they have decided not to exhibit because their allotments of space were not made in time and they cannot now prepare a creditable exhibit. This could not be helped. Perhaps no previous World's Fair had such an overwhelming application for space, both as to number of applicants and space desired. The whole of Jackson Park would have had to be roofed over to accommodate them if all had been accepted and every one had been given the space designated. This was manifestly impossible, and the problem then arose how to treat the applicants. Their cases were passed upon critically, and, while some were rejected because their exhibits would have had no value in a World's Fair, the others were assigned the best space and the best positions available. Those who applied after the published date for closing the consideration of applications were not rigidly barred out, but their applications were filed in order and when an opportunity arose through the declination of some exhibitor previously favored the late comers were given a chance. In this way space will continue to be alloted up to nearly the opening of the exposition. No fault can be found with this, but, on the contrary, the dilatory applicant should consider himself fortunate if he gets space in that way.

Chief Skiff has had the same difficulties to contend with in Mines and Mining. A symmetrical plan for the distribution of exhibits by groups has been followed in his department. This, however, brings some exhibitors in galleries who prefer to be on the main floor and *vice versa*. Some are in corners when they prefer locations near main entrances or along principal passages. Some think their exhibits belong properly in Machinery Hall or in the Transportation Building, instead of the Mines and Mining Building. Individual dissatisfaction depends so largely on temperament that it is not strange that there have been cases of withdrawals, because all men are not blessed with good nature, and some men will insist on having their own way in defiance of necessary rules and regulations.

Preparations for Exhibits.

Machinery Hall would, ere this, have been a very busy scene, with exhibits being rapidly installed, if the winter had not been so severe. Not only were men unable to work for long periods, on account of the intense cold, but the roofs proved inadequate to the burden of snow and ice. Skylights gave way here and there, and, while the damage done was not at all serious, yet the admission of snow and rain deterred exhibitors from installing valuable machinery. About half the foundations for the engines are ready and some of the smaller engines are in place, but the weather will have to be a little more propitious to enable roofers to repair damages before the large engines are erected. There was another fall of nine inches of snow in the Northwest on Friday. Thus it goes. Installation under such circumstances is out of the question.

The Mines and Mining Building is in much better shape, being smaller, and therefore better roofed. Some 32 carloads of exhibits were on the floor on the 16th, which is in advance of any other department. The unpacking and arranging of these exhibits is being pushed vigorously. Many States will make exhibits as States, and all of these report their work in excellent shape. The technical library in this building will perhaps be the finest ever collected in connection with mining and metallurgy. The problem now confronts Mr. Skiff how to get the necessary room to display it properly.

An Unwise Rule Rescinded.

Members of the Council of Administration passed a rule on the 16th that exhibits and material intended for World's Fair buildings should enter Jackson Park

without charge, provided the same were conveyed at the cost of the exhibitors.

There was a great hubbub at the Sixty-fourth street entrance to the park that morning when a score of wagons drew up waiting for admission to the grounds. According to a rule recently promulgated by Mr. Holcomb, General Manager of Transportation, cartage was to be charged for at the rate of 6 cents per 100 pounds. Commissioner Wermuth of Germany and representatives of Great Britain, New South Wales and France called on Director-General Davis to protest against the charge being exacted. Colonel Davis immediately applied to the Council of Administration, asking fair play for the foreign government representatives. The council decided that the charge of 6 cents per 100 pounds should not be exacted upon the entrance of material which might be carted to the several buildings at the expense of the intending exhibitor.

This decision on the part of the Council of Administration did not meet with the approval of Director of Works Burnham. Mr. Burnham thought that a toll should be exacted for the use of the exposition roads. He saw no other way of equitably providing for the expense of building them. The council, however, thought differently.

A Salt Water Pump.

At College Point, L. I., is a remarkable pump, which has been constructed to keep the supply of salt water for the fisheries exhibit of the proper quantity and quality. Two similar machines have been tested and operated successfully. When the fisheries exhibit was planned one of the puzzling details was how to secure a continuous supply of salt water for the sea fish and how to keep it free from contamination. A means of transporting the water right from the ocean by evaporizing it and subsequently restoring it was devised. Then a special pump had to be made, as the water must be used over and over again, and that with as little loss and contamination as possible. No ordinary pump can be used for salt water without the metals being corroded and acids injurious to animal life being formed. The new pump does not differ much in appearance from any ordinary machine of its kind, except that no metal beside a few nickel bolts can be seen. Inside, however, there are many differences, the valves, pistons, rings and springs all being made of hard rubber. In this way things have been arranged so that the supply of sea water will be constant and pure in the lakes from the opening of the fair to its close.

Relics from Yucatan.

One of the most interesting displays that will be seen at the fair will be that made within the "Ruined Palace of Mitla" by the department of ethnology. Prof. Edward H. Thompson, who has been consul at Merida for eight years, has prepared papier mache molds of the ancient sculptures found in the deserted cities of Yucatan, and 30 cases of these molds have already arrived at the park.

The ruins of Uxmal will be reproduced on an extensive scale, and among them will be a perfect *fac simile* of the temple and figure of the god Kukulkan, or the great feathered serpent. The body of the serpent is wrought in the stone work all around the building, and this will be represented entire. The original materials were principally marble and coarser varieties of limestone, and the work shows that the ancient Yucatecos possessed great skill in mechanical workmanship, though their industrial arts were but poorly developed.

The great forest or jungle covering the supposed kingdom of the ancient Mayas is about the size and shape of Ohio, and covers portions of Yucatan, Guatemala and adjacent Mexican States. There once lived in that area from 5,000,000 to 10,000,000 people, according to Captain Del Rio, who explored part of it late in the last century, and Captain Dupaix, Brasseur du Bourbourg, A. Le Plongeon, and other recent explorers. The ruins of their cities are now spoken of as buried. They are in fact buried only in dense masses of tropical growth, of which the thorny shrubs and parasitic vines present the greatest obstacles. One of the finest reproductions by Professor Thompson will be that of an arched gate of the ancient palace of Labna, which was literally chopped out of the jungle.

Miscellaneous.

From the Watervliet Arsenal gun shops at West Troy, N. Y., will be sent for exhibition six guns of different calibers and sizes. They will include a 12-inch gun, a 10-inch gun, a 7 inch howitzer, a 5-inch siege rifle, a 3.6-inch rifle and a 3.6-inch mortar. The largest and the smallest gun will be mounted alongside of each other. The largest is 37 feet long and weighs 52 tons and the smallest is 2 feet long and weighs 224 pounds.

A representative traveling man may be elected to a position on the Board of Directors of the World's Fair. Charles W. Clingman is receiving substantial support for the place, and, it is reported, has a good chance of election. He is making an effort to get proxies from the stockholders by means of a circular letter.

The Indiana Senate on the 16th decided to appropriate $75,000 for the Indiana World's Fair Commission. The House committee has recommended only $25,000, but it is believed the House will concur in the Senate's action.

The South Dakota Senate on the 16th passed the House World's Fair bill, with amendments increasing the amount to $65,000 and creating a commission to be appointed by the Governor.

Advices have been received of the arrival in New York of 41 cases containing parts of the great locomotive exhibition to be made by the Great Western Railway of London, Eng.

The American consul at Callao commends the idea that American manufacturers and producers should club together and establish a wholesale deposit in Lima, with goods at prices sufficient to cover expenses. Later, after the work of introducing goods has been completed and the proper lines discovered, a division of the business could be made among several firms.

The Dominion Government finds that it cannot interfere to thwart the recent sale of Nova Scotia coal mines to an American syndicate.

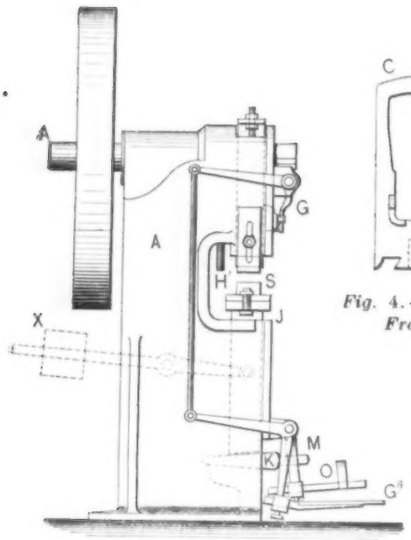


Fig. 1.—Side Elevation.

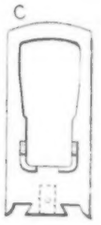


Fig. 4.—Holding Frame.

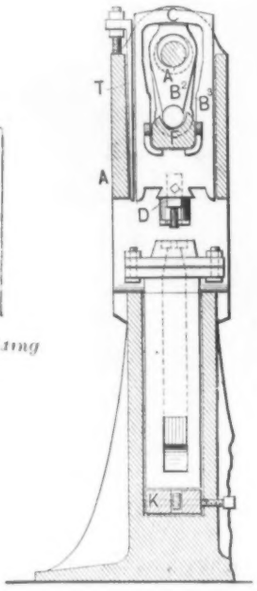


Fig. 2.—Sectional Front Elevation.

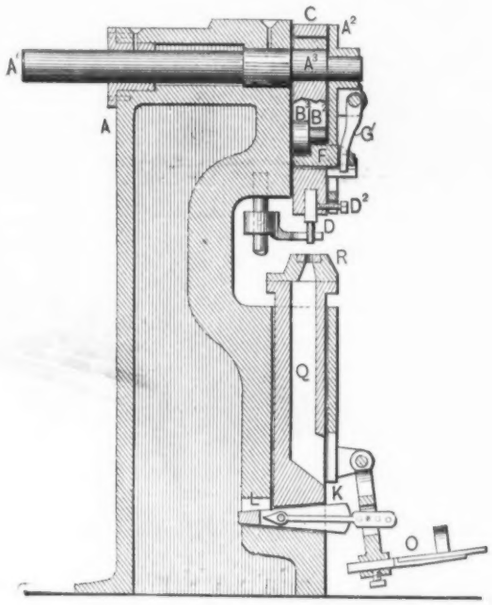


Fig. 3.—Sectional Side Elevation.

THE SCHNEEKLOTH PUNCHING AND SHEARING MACHINE.

Schneekloth Punching and Shearing, and Bending Machines.

We present drawings of the principal features of a punching, shearing and forging machine, and also of a bending machine, built by H. A. Schneekloth of 530 West Twenty-eighth street, New York. The shaft A' is provided with an eccentric part, A^3, which is passed through an opening in the upper end of the plunger, which is formed with two shanks, B^2 B^3, of different lengths, as shown in Fig. 3, and having rounded lower ends. This plunger is mounted to reciprocate between the front of the standard and the front plate A^2. A reciprocating frame, C, shown detached in Fig. 4, provided with an opening for the plunger, is mounted so as to move between the side guides of the frame, and is formed at its lower end with an opening for receiving the punch D. The frame is also formed with a dovetailed projection for receiving a hammer. A block, F, rests upon the bottom of the opening, the top of the block being curved to receive the rounded ends, B^2 B^3, of the plunger. On the front of the block is a loop to receive the lower end of the arm G, projecting from a shaft extending across the front plate. This shaft is provided with an arm connected, as clearly shown in Fig. 1, with the foot plate G^6, by depressing which the arm G and block F will be pulled outward and the plunger stopped.

The block J is mounted to slide vertically in a guide in the front part of the frame, and its lower end rests upon a wedge-shaped piece, K, mounted to slide in an opening, L, extending inward from the front of the frame. This piece is connected with the treadle O, which is adjustable, and its inner end can strike against the front of the frame and act as a stop to prevent raising the block J too high. The wedge may be adjusted in different positions by means of the small holes formed in the link, as shown in Fig. 3. The wedge is locked in place by the screw shown in Fig. 2. The block J is formed with a passage, Q, through which chips can pass. The die holder R is held on top of the block by bolts.

The operation is as follows: The suitable tools are placed in the tool holders and the article to be acted upon is placed upon the lower tool holder. The block J supporting the lower tool holder rests on the wedge K, which can be locked in fixed position in case the tool holder is to remain in fixed position, or the tool holder can be shifted upward during the progress of the work by forcing the wedge K inward by means of the treadle O. The rotating shaft A' and its eccentric A^3 reciprocate the plunger B. When the block F is in the position shown in Fig. 3, it is forced downward by the two shanks B^2 B^3 of the plunger, and as the block F rests on the bottom of the opening in the frame C, the latter and the tool holder on it are also forced down. The top of the frame rests on the top of the plunger and is raised by the plunger when the latter is raised. When the machine is to be stopped the treadle G^6 is released and by the weight of the parts the arm G' is thrown outward, whereby the block F is moved, so that the shanks B^2 B^3 when they descend cannot strike the top of the block and thus cannot impart any motion to the frame, which by the frictional contact between its sides and the tapering key is held in raised position. When the machine is to be started again the treadle G^6 is depressed.

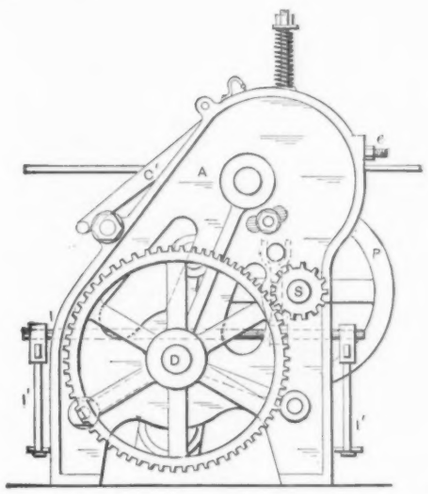


Fig. 5.—Side Elevation.

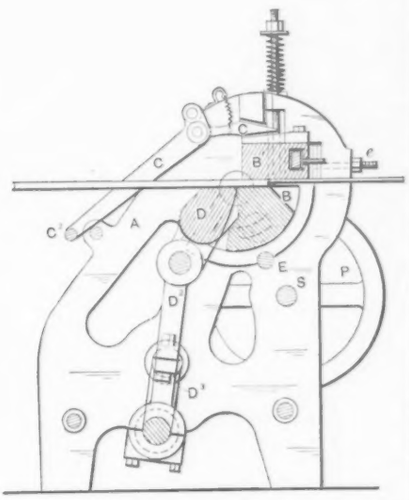


Fig. 6.—Vertical Section Showing Arrangement of Parts Before Bending.

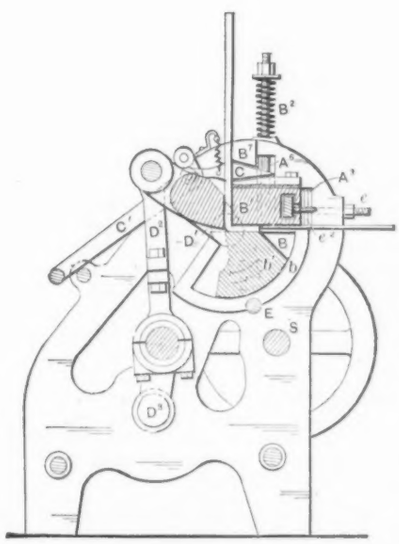


Fig. 7.—Vertical Section Showing Arrangement of Parts After Bending.

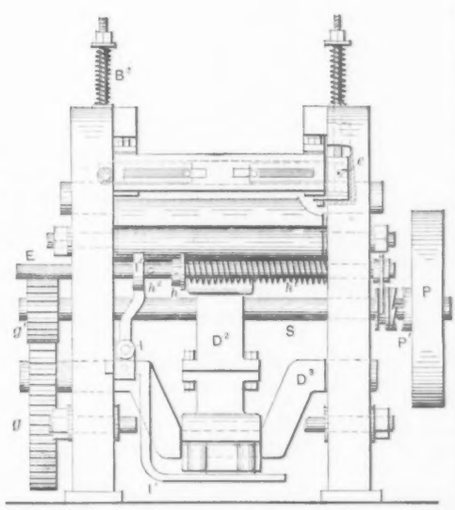


Fig. 8.—Front Elevation.

THE SCHNEEKLOTH BENDING MACHINE.

Bending Machine.

This machine is shown in Figs. 5 to 8. Between the upper parts of the two standards forming the frame are placed two holding jaws, B B', the lower one being supported adjustably between the sector-shaped ribs *b* of the standards, and being held in any desired position according to the angle to which the bars are to be bent. At the ends of the upper jaw are blocks placed in the recesses A^6 in the frame and provided with the vertical rods B^2, which have their upper parts threaded. Between the nuts on these rods and the top of the standards are springs of sufficient strength to lift the upper jaw when it is released from a mechanism by which it is held rigidly in its lowermost locked position. It is evident that the lower front edge of this jaw can be made in any desired form according to the angle to which the bar is to be bent. Provision is made, as shown in Figs. 6 and 7, for holding the upper jaw in proper position in relation to the lower one. The wedges C are operated by the handle C^2. When they are moved inwardly they press the upper jaw, against the tension of its springs, in a downward direction, while when they are withdrawn the springs lift the jaw sufficiently to permit the introduction of the bar to be bent. As soon as the bar is introduced the wedges are forced in, when the bar is held by the two jaws.

The bending is accomplished by the jaw D which is shown in position before bending in Fig. 6, and after bending in Fig. 7. This jaw is operated from the crank on the shaft D^3, which is driven by the gearing shown. On the driving shaft S is the clutch P', which is operated by the treadles I', placed one at the front and one at the rear end of the machine. The moving member of the clutch is normally held out of engagement by the spring *h*.

The machine is well proportioned and strongly built. In actual practice it has been found to do the work rapidly and with a uniformity not possible with a hammer. In addition it has been found to be less severe on the metal, which shows fewer cracks at the bend.

A bill framed by Philadelphia attorneys has been introduced by Senator Porter authorizing shipbuilding companies to own and operate vessels for foreign and domestic trade, to increase their capital to $10,000,000 and issue bonds.

The Dominion Government has made a reduction of duty on binder twine from 25 per cent. to 12½ per cent. Permission is granted foreign shippers to import coal oil in tank cars.

Compound Expansion Engines.—I.

That there is not only a gain, but a very conceivable gain, in economy of fuel consumption by the use of the compound expansion principle has been too clearly demonstrated by modern practice to admit of a continuance of the skepticism which opposed it at its advent. Compound engines are to-day almost universally employed for the development of large powers and the objectors are silenced as to the general principle, although there are legitimate grounds for doubting the wisdom of carrying it to such extreme limits as has been done in numerous instances. But while the fact of its economy is now accepted, there is still a wide discrepancy of opinion as to the real cause to which it may be attributed. Numerous theories are offered in explanation, of which some are radically opposed, and although some of them would seem to be correct logical deductions from known facts, yet the difficulty remains that they do not fully account, even on the purely theoretical basis, for the results obtained in actual practice. That there is such a cause or causes, however, is obvious from the fact that we have proof of the effect.

The present wide application of the multi cylinder expansion principle to almost all classes of engines, large and small, condensing and non-condensing, gives an increased importance to the subject, as there is no doubt that much of the possible economy is sacrificed by reason of insufficient knowledge of the requirements on the part of the designers in proportioning and arranging the essential parts. While to a certain extent the practice which has given good results may be considered a safe guide to further application, there can be no doubt that a complete understanding of the fundamental principles involved must be essential to enable the full possible development of expansion economy.

Formerly the strongest argument against its possibility was the proposition that the same effect could be produced from a given steam consumption by means of a single-cylinder engine, in which the expansion was carried to the same degree as that in the two-cylinder compound engine, and that the complication of the second cylinder, with its valves and valve motion and crank and connections, must therefore result in a loss instead of gain in economy. If we eliminate from the problem all extraneous conditions and consider only the physical effect of the given volume of steam in the two methods of expansion, this may easily be shown to be correct, and it will be of service in the analytical investigation of the subject, by showing where not to look for the causes known to exist, as well as to suggest the direction of further research.

Let us suppose, for example, the case of a compound (two-cylinder) engine, calculated upon a given initial pressure and size of high pressure cylinder. Let us compare the theoretical efficiency with that of an equivalent single-cylinder engine—equivalent, that is, in the volume of steam and rate of expansion. We may assume a steam pressure of 110 pounds (or, calling atmospheric pressure 15 pounds, say 125 pounds above perfect vacuum), and a terminal pressure of 5 pounds. Let the area of the high-pressure piston be 100 square inches and the length of stroke 2 feet:

P = initial steam pressure above vacuum.
P′ = high pressure terminal or low-pressure initial.
R = ratio of expansion for each cylinder, also ratio of high and low pressure area.
T = low-pressure terminal above vacuum.
M = mean high pressure of steam per square inch
M′ = mean low pressure of steam per square inch
H = hyperbolic logarithm of R
A = area of high-pressure piston.
A′ = area of low pressure piston.
C = mean pressure in single-cylinder engine of same area and rate of expansion.

We find first the value of R by the formula $R = \sqrt{\frac{P}{T}} = \sqrt{\frac{125}{5}} = 5$. By table we find the hyperbolic logarithm of 5 to be 1 60944. Then by the ordinary formula $C = P\,\frac{1+H}{R} = 125 \times \frac{1 + 1.60944}{5} = 65\ 236$ pounds. This, however, will not be the value of M, for the reason that there is at all times the same pressure acting against the advance of the high-pressure piston as that which is driving the low-pressure piston; or, in other words, the mean effective pressure per square inch on the latter is the mean back pressure on the former, and this amount must be deducted from C to determine the value of M. The formula will then be $M = \left(P\,\frac{1+H}{5}\right) - M'$. We must first, therefore, ascertain the value of M′. It is readily seen that as the area of high-pressure piston, being subjected to the same pressure, must also resist the advance of the low-pressure piston, therefore, the amount of such resistance must be deducted from the mean pressure per square inch on the latter to give the effective pressure. As the ratio of areas of the two cylinders is 5, the deduction may be in the form of a percentage, dependent on the value of R. In the present instance it will be $\frac{1}{5} = 20$ per cent. Or the formula for the value of M′ may be $M' = \left(P'\,\frac{1+H}{R}\right) \times \left(1 - \frac{1}{R}\right) = \left(25 \times \frac{1 + 1\ 60944}{5}\right) \times \left(1 - \frac{1}{5} = 0.8\right) =$ 10 438 pounds. Then $M = \left(P\,\frac{1+H}{R}\right) -$ M′ will be $\left(125 \times \frac{1 + 1.60944}{5}\right) - 10.438 =$ 54 798. The respective areas will be A = 100 square inches, and A′ = A × R = 100 × 5 = 500 square inches. We find, then, that the total pressure driving the crank will be (A × M) + (A′ × M′) = 100 × 54,798 = 5479.8 pounds, and 500 × 10.438 = 5219, and 5479.8 + 5219.0 = 10.698 8 pounds, which × by stroke = 2 feet = 21,398 foot-pounds.

Let us now see what will be the power of the single-cylinder engine. The area, as given for the high pressure compound, must be 100 square inches. The mean pressure we have in the value of C = 65 236 pounds for the equivalent ratio of expansion of one cylinder only, but in this case we must consider the ultimate expansion of both cylinders and $\frac{P}{T} = \frac{125}{5} = 25$, or R^2, as the ratio for single cylinder. The hyperbolic logarithm of 25 being 3 2189, our formula (using the values previously given) becomes for mean pressure $P\,\frac{1+H}{R^2} = 125 \times \frac{1 + 3\ 2189}{25} = 21.095$; which × by 100 square inches in area = 2109.5 pounds. Now as the point of cut off in the first cylinder was one-fifth of 2 feet, or 0.4 foot, it will, of course, be the same in the single cylinder, and the length of stroke of the latter will be 0.4 × by the number of expansions, or 25 × 0 4 = 10 feet. Then 2109 5 pounds × 10 feet = 21,095 foot-pounds, or practically the same as for the compound engine.

If for the above formulæ for high and low mean pressures we substitute the following, as given by an eminent authority, the discrepancy will be so small that it may be accounted for by the neglect to carry out the decimals in logarithms, &c., to a greater number of places. For mean low pressure $M' = P'\,\frac{H}{R-1} = 25 \times \frac{1\ 60944}{5-1} =$ 10.06 pounds; and for mean high pressure $M = \left(\frac{1+H}{R}\right) - \left(P'\,\frac{H}{R-1}\right) = 65\ 23\} -$ 10.06 = 55.176. Then (10.66 + 500) + (55.176 × 100) = 10,547.6 which × 2 feet stroke = 21,095.2 foot-pounds.

The foregoing calculations are based upon Mariotte's law, that "the volume of any gas varies in the inverse ratio of the pressure—the temperature remaining constant." Also, the purely mechanical element of cylinder clearance has been neglected, though, as is readily apparent, it is of very considerable importance in the comparison and acts against the economy of the compound system. For instance, if the clearance in the single cylinder were not excessive, it would be equal to, say, 5 per cent. of the volume of cylinder for a stroke of 2 feet, or 1 per cent. for the 10 feet. The steam effect lost by clearance then would be (100 × 120) ÷ 100 = 120 cubic inches, at the terminal pressure of 5 pounds; while the loss by the compound engine would be (100 × 24) ÷ 20 = 120 cubic inches at 25 pounds for small cylinder and (500 × 24) ÷ 20 = 600 cubic inches at 5 pounds for large cylinder. Of course the steam in high-pressure clearance space is not actually lost, being subsequently utilized in the low-pressure cylinder. The fact certainly will not assist in locating the source of economy of the latter engine.

That in some manner the prevention of loss of heat is accomplished by compounding seems to be the only means of solving the problem, and in that direction we may seek by calculation to ascertain the possibilities. In making the comparison, of course, we must assume the single-cylinder engine to be of the proportions of diameter and stroke (with relation to the point of cut-off) conformable to the best modern practice, and thus we may ascertain the comparative relations between a given volume of steam and the resultant work in foot-pounds by the respective systems. For the compound engine the above proportions of area and stroke and the cut-off are about correct, being 11.2875 inches diameter (100 square inches area) for small and 25 2313 inches diameter (500 square inches area) for large cylinder, and stroke of 24 inches. The point of cut-off, one fifth of 24 inches, = 4.8 inches. The equivalent single cylinder may be found as follows: The volume of steam is 100 square inches × 4.8 inches cut-off = 480 cubic inches. As the expansion ratio is 25, the volume of cylinder will be 480 × 25 = 12,000 cubic inches If we call the stroke 36 inches, we have $\frac{12,000}{36} = 333\frac{1}{3}$ square inches area, and $\sqrt{\frac{333\frac{1}{3}}{0.7854}} = 20.6$ inches diameter. The point of cut off $= \frac{36}{25} = 1.44$ inches, and the length of stroke during expansion is 36 — 1.44 = 34 56 inches. To recapitulate, we have to compare the useful mechanical effect from 480 cubic inches of steam at 110 pounds boiler pressure and vacuum of 20 inches in a single-cylinder condensing engine of 20.6 inches diameter ($333\frac{1}{3}$ square inches area) by 36 inch stroke, cutting off at one twenty-fifth, or 1.44 inches, with the equivalent in a two-cylinder compound engine (condensing) having a high-pressure cylinder of 11.2875 inches diameter (100 square inches area), and low-pressure cylinder 25.2313 inches diameter (500 square inches area), by 24 inches stroke, the point of cut-off being one-fifth, or 4 8 inches. For both engines we may

assume a rotative speed of 60 revolutions per minute; and to simplify the calculations of heat transmission the cylinders may be regarded as unjacketed, and exposed to a uniform atmospheric temperature of 60° F.

By referring to our previous calculation, from which the efficiency of the two engines was shown to be equal, it will be seen that no account was taken of the loss of pressure due to cylinder condensation, and that—except in so far as it is modified by the use of the hyperbolic logarithm denoting the theoretical expansion curve—the figures were based upon the simple law of Mariotte. As, however, an essential condition of this law of expansion is absolute uniformity of temperature, it is clearly inapplicable to the comparison, unless the loss of temperature can be shown to be the same in both engines. That the degree and sources of this loss are not the same is well known, and unless the difference can account for the greater proportion of the amount of superiority shown to result from use of the compound expansion principle, it must be a difficult matter to locate the cause.

In most of the published theories and data relating to this subject the assumption is made that the variations of temperature in the internal surfaces of the cylinder are equal to those of the volume of steam, from the initial temperature at the time of cut-off to that due to its terminal pressure after the limit of expansion has been reached; also, that these changes occur throughout the entire length of the cylinder, notwithstanding the fact that beyond the point of cut-off the cylinder is, at no time, exposed to the initial temperature of the steam, and that, therefore, the mean and not the maximum cylinder temperature should be considered, with relation to the mean temperature of the steam throughout the stroke.

With reference to the first point, the elementary laws of heat are directly opposed to the hypothesis of such rapid transmission from the steam to cylinder, and *vice versa*, as would be necessary to equalization of temperature at each stroke of the piston, except in case of such low piston speeds as are now almost obsolete, and not to be considered in comparisons of modern practice. For instance, if we take the case of our single-cylinder engine, the steam enters at 125 pounds (above vacuum), with a temperature of 344.2°, and cutting off at one twenty-fifth stroke, expands to 5 pounds, or 161.4°, the difference being 182.8°, which must be alternately abstracted from the steam and surface of cylinder to equalize the temperatures. To show the fallacy of this proposition it is only necessary to analyze the facts as they actually exist. It is certainly true that the maximum temperature of the steam cannot extend beyond the point of cut-off, and that the limit of length to which the cylinder temperature can be raised by that of the steam, maximum, is restricted to the same point. The fall of pressure, and consequently of temperature, is very rapid immediately after cutting off (as shown graphically in the expansion curve of indicator diagram), and, therefore, as the cylinder temperature cannot exceed at any given point that of the steam due to its degree of expansion when the piston has reached that point, the difference between the two must be very materially less than that given above.

Of course the comparatively high conductivity of the iron will somewhat modify the temperature throughout the length, but, as we shall see later, it will not be of more than minor importance in its effects. It would seem clear, then, that the mean temperature of steam for the entire stroke and its resultant effect on that of the cylinder should be the basis upon which to calculate the effects of variation; and that the difference at any one point may be found from the corresponding pressure due to the rate of expansion reached.

Taking the previous figures, we may find the mean temperature from the mean pressure calculated by the formula, which we have seen to be 21.095 pounds, and the corresponding temperature is 231.5°, which we may assume to be also that of the internal surface of the cylinder for its whole length, disregarding, for the present, the external loss by radiation, &c. The mean difference of temperatures then will be 344° − 231.5° = 112.5°, say 112°, instead of 182°, as above, or nearly 38½ per cent. less. In order to go a little more into detail, the following table has been arranged to represent the stroke of piston divided into 25 equal parts, denoting each an increment of expansion, for which are given the mean and terminal pressures and the respective temperatures due to each:

Expansions.	Mean pressure, $P\frac{1+H}{R}$	Mean temperature.	Terminal pressure, $\frac{P}{R}$	Terminal temperature.
	Pounds above vacuum.	Degrees Fahr.	Pounds above vacuum.	Degrees Fahr.
1, cut off.	125.0	344.1	125.0	344.1
2...	105.82	331.7	62.50	299.0
3 ...	87.44	318.1	41.667	272.5
4....	74. 7	307.1	31.25	254.0
5....	65.235	298.1	25.0	241.0
6....	58.16	290.5	20.833	23 .1
7 ..	52.6	284.1	17.86	222.0
8 ...	48.1	278.5	15.625	215.0
9 ...	44.4	273.5	13.9	209.2
10....	41.28	269.3	12.5	203.3
11....	38.61	265.0	11.36	199.3
12....	36.3	261.4	10.42	195.2
13 ...	34.35	258.1	9.615	191.4
14...	32.49	254.9	8.91	188.0
15 ..	31.9	252.1	8.333	184.8
16 ...	29.475	249.3	7.8125	181.8
17....	28.19	246.8	7.353	179 1
18 ...	27.0	244.3	7.0	176.9
19....	25.95	242.1	6.6	174.0
20....	24.97	240.1	6.25	171.9
21. ..	24.08	237.8	6.0	170.2
22....	23.47	236.6	5.68	167.7
23....	22 47	234.3	5.46	166.0
24 ...	21 75	232.4	5.20	164.0
25....	21.095	231.0	5.0	161.4

Referring to the table, line 1 represents the point at which the steam is cut off, and line 2 the position of piston when steam has expanded to double its volume, and consequently $\left(\text{by } \frac{P}{R}\right)$ to one-half the initial pressure, or 62½ pounds, as per column 4. The extreme difference of temperature occurring between point of cut-off and line 2 is 344° − 299° = 45°, while the mean temperature during the interval we find to be 331.7°, or but 12.4° difference. Let us assume that the internal surface of cylinder included in space 1 has acquired the full initial temperature of the steam—344°—at the instant of cut-off, and calculate the possible amount by which the temperature of space 2, at line 2, can exceed that due to the terminal pressure, or 299°.

The only source from which any increase is possible is the conductivity of the iron and the parallel radiation from piston and cylinder head. The former quantity will be for each degree of difference in temperatures 233 heat units per hour for 1 inch of length of cylinder wall and inversely as the whole length. Then, as one stroke is 36 inches, the 25 spaces represent each $\frac{36}{25}$ = 1.44 inches, the conduction will be $\frac{233}{144}$ = 161.8 heat units, which, multiplied by the extreme difference, 45°, = 7281 heat units per square foot per hour. The cylinder being 20.6 inches in diameter and say 1 inch thick, the area of conduction will be (22.6 × 0.7854)—(20.6 × 0.7854) × $\frac{1}{144}$ = 0.4856 square feet, which × 7281 = 3536 total heat units per hour. Now, as our piston speed is 3 feet × 2 × 60 revolutions per minute = 360 feet, the mean time required to travel 1.44 inches will be 1.44 ÷ (360 feet × 60 minutes × 12 inches) = $\frac{1.44}{259200}$ = 0.000005½ hour, which × 3536 heat units = 0.019448 unit as the amount of heat transmitted by conduction from first to second space during expansion. By absorbtion of radiant heat from surfaces exposed to initial temperature we may ignore the source and assume that the amount is sufficient to furnish all that the absorbing power of the cooler surface can receive. The amount of surface is (20.6 inches × 3.1416 × 1.44) ÷ 144 = 0.647 square feet. The radiating and absorbing power of clean cast iron is 0.648 heat unit per square foot per hour for each degree of difference between the radiant and absorbent. Then 0.648 × 0.647 × 45 × 0.000005½ = 0.00010377 heat unit, which + 0.019448 by conduction = say 0.019552 unit as the total amount possible for increasing the heat of cylinder surface in second space above that due to terminal temperature of the steam.

Although the quantity is exceedingly small, it may be as well to see what it will represent in temperature. We have in 1.44 inches of cylinder section (69.92 square inches × 1.44) × 0.26 = say 26.18 pounds cast iron, the specific heat of which is 0.123. Then (0.019552 ÷ 0.123) ÷ 26.18 = 0 006° of increased temperature, or from 299° to 299.006°, which manifestly can have no appreciable effect. This being the case, it is clear that the maximum temperature of the cylinder cannot exceed that of the steam due to its degree of expansion, and that the condensation or transfer of heat from steam to cylinder and from cylinder to steam must be calculated on the differences due to these conditions.

Subtracting the mean of the terminal temperatures of spaces 1 and 2 from that of space 1, we have 344 − $\frac{344 + 299}{2}$ = 22.5° as the effective difference; and while in space 2 the cylinder is absorbing heat from the steam, the latter is absorbing from the cylinder in space 1. From this it would appear that the alleged great difference between the steam and cylinder walls does not exist in reality; for, if the above hypothesis be correct, the steam must be giving heat to one part and receiving from another part of the cylinder simultaneously, and in like amounts. Carrying out the idea to end of stroke, when the temperature has fallen to 161.4°, we find the difference between this and the intial temperatures of the several spaces to be 182.7° for first; 137.6° for second; 111° for third, and so on throughout all of the spaces, until finally it becomes but 3.6° between the initial and terminal in last space. It would seem, then, that the correct comparison of temperatures to ascertain the actual variation should be between a mean of the 25 terminals and the temperature due to the mean pressure for the entire stroke, and these we find to be 206.5° and 231° respectively—the difference being 24.5°, which agrees very nearly with the comparison between the first two spaces.

Let us now see, by calculation, what will be the heating and cooling effects on the surface of cylinder by the above variations of temperature of the steam, and also that on the steam by the cylinder. To simplify the calculation we may assume the capacity of the steam for imparting and absorbing heat to be greater than that of the cylinder, or, in other words, that the transmission is governed entirely by the capacity of the iron.

Referring again to the first and second spaces and using the previous figures, the loss by space 1 for the 12.4° between the initial and mean temperatures, as limited by the conductivity of the iron, will be as follows: The area of surface 0.647 square feet;

time 0.0000051/2 hour; thickness of metal, say one-half that of the cylinder, or 1/2 inch. Then $12.4° \times \left(\frac{233}{0.5} \times 0.647 \times 0.0000051/2\right) = 0.02056$ heat unit. This will decrease the temperature of, say, one-half the weight of iron in whole section of cylinder by $\left(\frac{0.02056}{0.123} \div \frac{26.18}{2}\right) = 0.01265°$ in space 1, and increase that of space 2 by the same amount. To find the mean effect for the entire stroke by the same method, we subtract the temperature of total mean pressure from the average of temperature due to mean pressures of the 25 spaces to obtain the mean variation. We have for the latter 262.45°, and from the table 231° for the former, the difference being 31.45°. The weight of one-half the thickness of cylinder is $\frac{69.92}{2} \times 36 \times 0.26 =$ 327.58 pounds, and that of 1/2 inch thickness of piston and cylinder head is $(333\frac{1}{3} \times 2] \times \frac{1}{2}) \times 0.26 = 86.67$ pounds = 414 25 pounds total. The total area of cylinder, cylinder head, and one side of piston will be $\left(\frac{20.6 \times 3.1416}{144} \times 36\right) + \left(\frac{333\frac{1}{3} \times 2}{144}\right) = 20.81$ square feet. The time of stroke is $\frac{1}{60 \times 2 \times 60} = 0.00014$ hour. Then $\left(\frac{233}{0.5} \times 20.81 \times 0.00014\right) \times 31.45° =$ 42.698 heat units as the quantity of heat lost by the warmer and obsorbed from the steam by the cooler portions of the cylinder. Reducing this to temperature, we have $\frac{42.867}{0.123} \div 414.25 = 0.841°$ as the mean loss and gain by cylinder. Of course the effect of this interchange of heat upon the temperature of the volume of steam will not be the same as we have found with relation to the cylinder, owing to the difference of specific heat, &c., but it is clear that a variation of less than 1° cannot possibly account for the loss of tension by the expanding steam, nor for the amount of condensation sure to occur when the expansion is carried to the extreme limit, as in the case under consideration.

(To be continued.)

An eloquent plea for the American apprentice was made by President Ittner of the National Association of Builders, in his annual address delivered before that body in St. Louis, 14th inst. Mr. Ittner advocated the founding of manual training schools and night trade schools for the benefit of apprentices. He spoke of J. Pierpont Morgan's gift of $500,000 to Colonel R. T. Auchmuty of New York, the pioneer of trade schools, and said that he wrote Mr. Morgan a letter of thanks in the name of the National Association of Builders and the American boy, to whose advancement Colonel Auchmuty is devoting the remainder of his days. Mr. Ittner said favorable reports were received of the trade school established by the national association at Philadelphia, although no progress had been made in the trade school project for St. Louis. He hoped the day would come when no American boy would be deprived of the privilege to become a skilled workman; that there was no reason for the present discrepancy in wages between skilled and unskilled labor, and that the dearth of skilled labor to-day is due to the proscription of the apprentice system by labor organizations.

As a man who had the benefit of an apprenticeship in two trades, Mr. Ittner expressed his sympathy for the youth who was debarred from a trade by arbitrary regulation. He looked to the trade school to remedy this state of affairs.

The New Edison Station.

Through the courtesy of the *Electrical World* we are enabled to present herewith a setional drawing and a plan view of the new Edison station in New York. The important development of the Edison Electric Illuminating Company of New York occurred when it was decided, in 1887, that the success of the company justified their extension into the uptown districts. Property was purchased for the new stations in Twenty-sixth street and in Thirty-ninth street, and the work of erecting the stations was commenced in the summer of 1887. Simultaneously the new three-wire system of feeders and mains was laid underground. It was then the policy of the company to complete stations and equipment before beginning to deliver current, so that it was not until Thanksgiving Day, 1888, that current was delivered from the Thirty-ninth street station, and Christmas Day, 1888, from the Twenty-sixth street station, neither being fully under way until the first part of 1889. At the close of 1888 the company had on their records 710 customers and 16,377 incandescent lights. The first motor had been put on the system in the down-town district in the fall of 1884, and the first low-tension arc light had been connected with the system uptown in the spring of 1889.

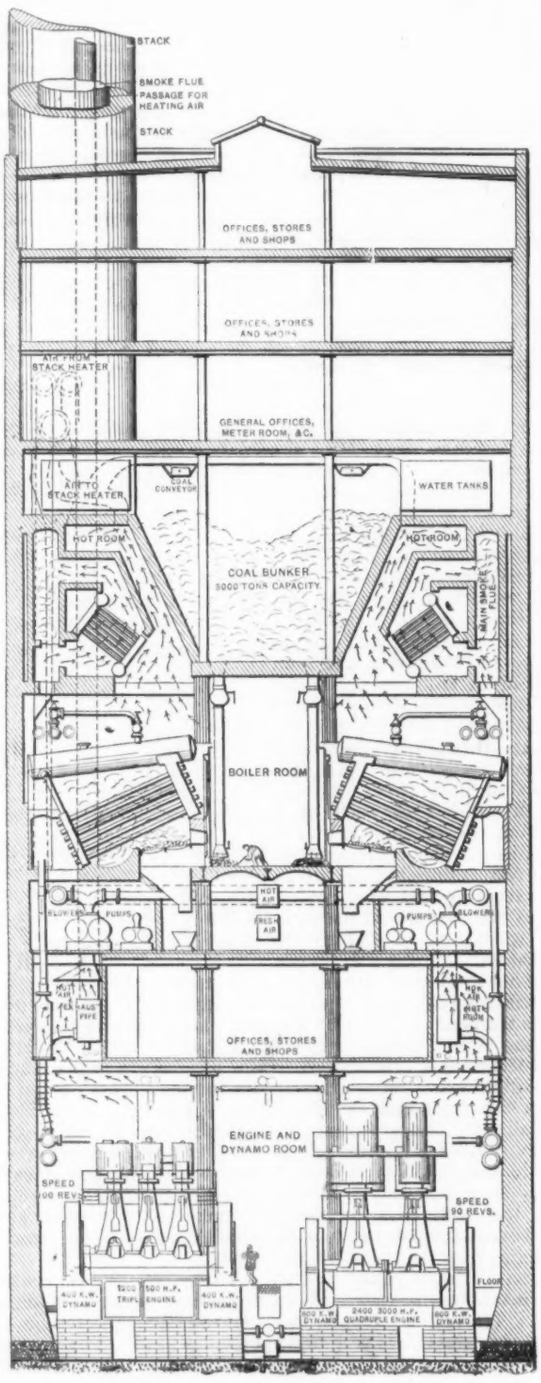


Fig. 1.—Vertical Section.

THE NEW EDISON STATION, NEW YORK.

The new station, extending from Duane to Pearl street, near Elm, is noteworthy for providing a capacity of nearly 30,000 horse power (the equivalent of 300,000 16 candle-power lamps burning at once, or over 400,000 installed) upon ground 74 feet by about 200. The central idea has been to replace land-engineering practices by marine-engineering methods.

The main floor is 30 feet high from floor to ceiling, with 10 feet space beneath the

floor for engine foundations, condensers, piping, cables, &c., and it is intended to contain ten 2500 horse-power engines each with a pair of 800 k. w. dynamos; two 1250 horse-power engines, each with a pair of 400 k. w. dynamos, and two 600 horse-power engines, each with a pair of 200 k. w. dynamos. In the center of the eastern side wall will be the electrical gallery for the control of the feeders and of the dynamos, with voltmeters and ampère meters so large that they can be seen across the station, and a glassed gallery at the Pearl street end affords the station superintendent a view over the whole room. Above the main floor is a second floor for shops and stores, with a space of 10 feet wide divided off on each side for the steam pipes, and for collecting the hot air of the engine room to be sent to the stacks and there superheated for the boiler furnaces. The third floor is for the blowers, pumps, ash conveyers, air ducts, &c., beneath the boilers. The fourth floor, following the practice originated in the uptown stations, is the boiler room, providing for 30 separate boilers ranged on both sides, with a central passageway convertible, and to permit of promptly throwing out of use for repair. The whole system will run at the highest economy during ordinary loads, while for the hour or two of maximum load or in emergencies the whole or any part can be forced 50 per cent. or more above rated capacity, thus saving the investment of so much additional capital. These features of the building are shown in the sectional drawing, Fig. 1.

The new engines are all of the multi-expansion inverted cylinder marine type, developed according to specifications prepared for the company by John Van Vleck, its chief electrician and consulting engineer.

Of this type of engine, known as the Van Vleck disconnective engine, one triple-expansion 600 horse-power engine is in use at the new station, and two at the Twenty-sixth street station; a fourth is building for the latter. One triple-expansion 1250 horse-power engine of this type, as is now well-known, has been ready to run at the Elm street station since October last, awaiting the pair of 400 k. w. dynamos which are now being fitted to it; switchboard will be the feeder resistances, each feeder having three, which can be inserted in circuit for feeder regulation. At the front of the electrical gallery will be placed the dynamo-controlling apparatus, with a main ampere meter having a capacity for 100,000 ampères on each side, probably on the same principle as the ampère meters of 30,000 ampère capacity on each side now being built at the works of James White & Co., Glasgow, for the Twenty-sixth street station. The main voltmeters, also under construction there, will be 2 feet in diameter, so that the pressure can be noted from any part of the room.

The old Pearl street station and the Produce Exchange annex down-town, and the Thirty-ninth street station annex uptown, remain with the same electrical capacity as heretofore. The new central station down-town has a capacity of 26,950 ampères, which will be increased to 38,550 ampères within a month. The Twenty-sixth street station has a capacity of 16,200 ampères, which will be increased to 19,100 ampères early in the year; the new Fifty third street annex has, with

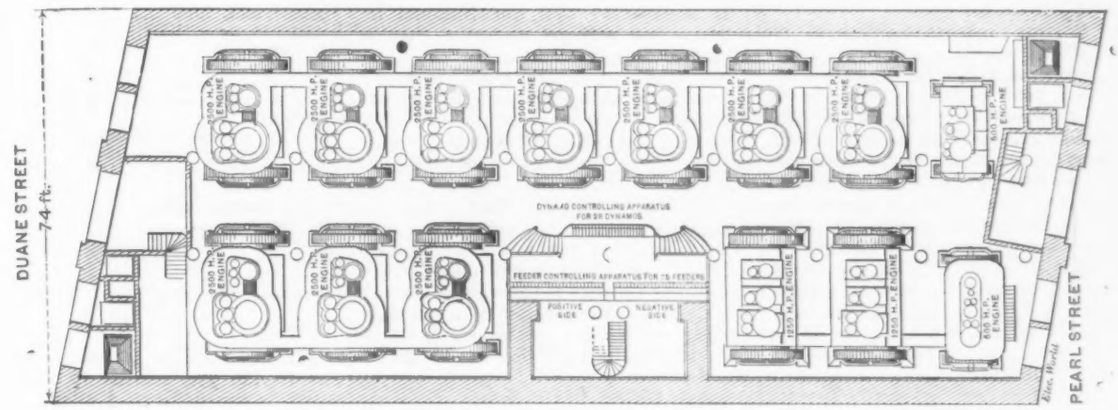


Fig. 2.—Plan of Engine Floor.

THE NEW EDISON STATION, NEW YORK.

for firing. The boilers will be of steel, on the safety water-tube principle, for at least 200 pounds of working pressure, extra long and extra high, with proportionately extended grate area to obtain the greatest steaming power from the least possible floor space, and they will develop steam for 20,000 horse-power (of multi-expansion engines at 15 pounds per horse power), and with forced draft for 30,000 horse-power. The fifth floor provides for the coal bunkers, approximating 3000 tons capacity, under whose sloping sides will be the main smoke flues with feed-water economizers, and above these water-storage tanks. Continuous coal conveyers will bring coal from two hoppers at each street front, for use alternately for receiving and weighing the coal and for discharging into the conveyers, and these, after emptying the coal into the bunkers, will return under the boilers, carrying the ashes down, arrangements being made that the carts which bring the coal shall take a load of ashes to the dump on the return trip. The office floor will be above the coal bunkers, reached by elevators and stairways from each front, and from the eastern wall will rise the two huge smoke-stacks of brick and steel, so arranged that the hot gases will be utilized to heat the air furnishing the draft for the boilers. The plans for forced draft and for utilizing the hot air can be thrown out of service at a moment's notice, and the whole system is so arranged as to be inter-

a second has been ready for delivery at the same station as soon as the other unit should be running,

The main equipment of the new station will be of the 2500 horse power engines, of which there will be room for ten. The first of these is now being manufactured by the Dickson Mfg. Company. The arrangement of the engines is shown in Fig. 2.

The dynamos provided for the new engines are all of the new multipolar type direct driven from the engine shaft, avoiding belting, and are of the external yoke or Gramme type, which for some years has been a favorite in European practice. Their improvement on the European type, in having no separate commutator or "outboard" bearing, effects a considerable saving in floor space.

All the dynamos in the new station will be controlled from an electrical gallery placed against the supports for the smoke-stacks, near the center of the engine room, a few steps above its floor. The main feeder-controlling switchboard will be at the back of this gallery and will be constructed for operating 75 feeders within a length of 40 feet, including a doorway through the center. The mechanism for each feeder will have 1500 ampère capacity, and each entire feeder unit, including the main resistance switches, the ampère meters and the pressure indicators, will take up a space only 3 inches wide—a concentration of electrical apparatus hitherto unapproached. Back of this

generating units and storage battery, a capacity of 1800 ampères for the hour.

Fayette County, with 42 mines, leads the production, the amount being 1,564,579 tons; Kanawha County has 49 mines and produced 1,175,371 tons; Mercer County, which, with McDowell, has seen the greatest development in the past few years, depending entirely upon the Norfolk & Western Railroad, has 17 mines and produced 1,275,141 tons; McDowell has 25 mines and produced 1,190,882 tons. In the production of coke Fayette County leads with 1366 ovens and a production of 680,216 tons. Marion County comes second with 620 ovens and a production of 227,291 tons.

Taws & Hartman of Philadelphia have sent out a notice calling attention to a series of patents on tuyeres, tuyere breasts, cinder notches, nozzles and tuyere pipe granted to them.

The Southern Pacific Railroad Company are making arrangements for the construction of a fleet of ocean steamships which will carry freight between Liverpool and New Orleans. The vessels will be sailed in connection with the steamers which ply between New York and New Orleans. The company have already contracted for two 10,000-ton steamships to be built at Newport News.

Canadian Notes.

Uncertainty as to the changes that may be made in the tariff during the current session of Parliament has had a disturbing effect upon certain lines of Canadian trade. In hardware circles the suspense has probably been greater than anywhere else, as several hardware staples are included in the agitation for lower duties. Bar iron, sheet iron, hoop iron, barb wire, binder twine, are among the articles on which advocates of tariff reform ask a reduction. No indication of the course the Government will follow has yet been given, except in the general statement, made previous to the opening of the session, that amendments of the tariff would be made. The Finance Minister has consented to receive a deputation from the Toronto Board of Trade, praying for lower duties on iron. The debate on the Budget commonly results in some additional changes. The general state of trade here is therefore slow, owing to the hesitancy of wholesalers and retailers to place orders until they know what increment of the price the duty may be. The time of year is also rather early for any marked opening out of the demand, but a good spring business is looked forward to.

The bar-iron manufacturers have recalled their list on extras and issued a new one. Their reason for the change is unknown, but there are excellent data for the basis of a guess. The first list, or that which they adopted early last month, quoted prices very much below those that jobbers had been previously selling at, and as this list was liberally distributed throughout the country, retailers and small consumers knew as much of the price at the mills as the jobbers and big consumers. This caused very general and strong discontent. It appeared strange that a reduction should be made on the extras when the base price of bar iron was advanced. What added to the indignation was the fact that some jobbers in Toronto and in Hamilton had large stocks of extras that they had bought before the reduction. As some of these stocks included imported iron, the reduction by the domestic manufacturers must have seemed like a malicious move to demonstrate that trade in imported bar iron was unprofitable. These circumstances would seem to furnish motives for jobbers to persuade the rolling mills people to issue a new list of higher prices. The iron manufacturers would probably perceive it was to their interests to accede, for their advance on the base price was a most unpopular and ill-timed move. It had strengthened the case of the opponents of the present measure of protection the rolling mills enjoy, and being made at the moment the Government declared itself in favor of modifying its protective policy, the advance could not be otherwise than risky. The perception of this fact may have been a factor in the cause of the issue of a new and higher list on extras. The new list secures a profit to the jobbers. The base price on bar remains $2.05, f.o.b. Montreal, Toronto, Hamilton, but rumors of cutting have been heard.

The position of the Canadian iron duties is briefly this: On pig iron the duty is $4 per net ton. In addition to this there is a bonus of $2 a ton paid for the domestic production of pig iron from Canadian ore. On bar iron the duty is $13 per net ton. The sum of the protection given in these two stages of production would seem ample for the development of the great natural and easily available iron resources of the country. But it has failed to foster a strictly native iron industry. The secret of its failure is the relatively extremely low duty on wrought scrap, which is admitted into the country at $2 per ton. The importation of scrap provides all our rolling mills with an abundance of raw material at a much lower price than it can be furnished for by our iron smelters. There is, therefore, no domestic market for forge irons or puddled bar. Without a profitable outlet for forge irons it would not pay to commence iron mining on a great scale, or to establish smelting works to any extent commensurate with our consumption. The result of the lack of balance in the iron duties is that we import the raw material for all our bar iron and our cast work, though the addition to the tariff on bar iron in 1887 was on the ground that our own natural iron wealth should be developed. The duty of $13 per net ton on bar iron is equal to about 55 per cent. of the value of the material at English mills. This great protection our own bar iron makers get the benefit of. Not only do they get what was intended for themselves, but also for the miner and the smelter of hard ores. And, according to the plaint of the manufacturers of implements, boilers, engines, tools, hardware, &c., the portion of the protection allotted by the tariff to them is seized on by the bar-iron makers, who are so fortified by the duty that they can raise prices so as to absorb nearly all the benefit the tariff gives to consuming manufacturers.

It is expected that the National Insolvency bill will get no further than its second reading this session.

The John Doty Works are now very busy on orders, working every night up to 10 o'clock.

The McClary Mfg. Company's Toronto branch did a large stove business last year according to the results of stock taking just completed. Last month the company's trade was more than double that of January a year ago. An improvement in their cabinet gas range will be one of the features of the coming season's stock. This is the addition of a hot-water heating attachment, which was successfully tested the other day on a 40 gallon barrel of water.

Stock taking never found the stove manufacturers' warehouses so bare as they are now. The demand has been good from all quarters, but particularly from the Northwest. The strike at several foundries for a considerable part of '92 caused a shortage.

The McClary Mfg. Company are reported to be contemplating the starting of works at Montreal to catch the Eastern trade. They could thus save freight on both material and product. Instead of bringing pig iron to the central works at London and shipping stoves, ranges, furnaces, tinware, &c, called for by Montreal orders, they might better save the freight both ways between Montreal and London by opening an Eastern branch of their works, as their Eastern trade is very large.

Very low freight rates have been quoted this season on tin plate, offers 6 shillings below those commonly holding being made.

A deputation from British Columbia has asked the Government to increase the duty on pig lead. The mines of the Kootenay district are rich both in the quantity and quality of the ore. If there is any advance made in the duty on pig lead, it is probable an equal advance would have to be made on the products to insure the protection provided on the pig. Sheet lead, lead pipe, shot, &c., would probably be obtainable at lower prices from outside, and thus the interests of the domestic manufacturers of these would be impaired.

The largest radiator ever known to be cast has been made by the Gurney Foundry Company—late the E. C. Gurney Company—Toronto. It is 45 inches high, 40 inches long and 9 inches through, and contains 130 square feet of heating surface. It is called the Quintette Rugby radiator, and is made in five hights, varying from 45 to 20 inches. It is intended for buildings with large amount of heating surface and with limited floor area. It is to be put on both the Canadian and the United States market, and will be made in Boston by the Gurney Hot-Water Heater Company. The design is very graceful and light, being by a well-known local artist.

The Gurney Foundry Company are working on some fine contracts. They have just placed four Oxford boilers in Loretto Abbey, displacing four large boilers put in by another firm. In the Protestant Orphans' Home they have placed a pair of twin double-crown boilers in the stead of three others that were taken out. They have also a very large order from the C. R. R. for Quebec buildings. The company are exceedingly busy just now.

San Francisco News.

The following is a statement of the imports of iron and steel and the manufactures thereof from foreign countries at the port of San Francisco for 1892:

Imports of Iron and Steel into San Francisco, 1892.

Pig iron, tons, 7,829	$106,326
Scrap iron, tons, 11,631	141,893
Bar iron, pounds, 1,886,516	32,443
Railroad bars, tons, 62	2,227
Ingots, steel, pounds, 12,682,184	113,211
Sheet, &c., iron and steel, pounds, 3,673,397	53,561
Tin plate, pounds, 43,406,689	1,279,955
Wire rods, pounds, 6,085,263	79,762
Wire and rope, pounds, 434,515	23,843
Anvils, pounds, 103,336	5,835
Chains, pounds, 63,077	1,723
Machinery	1,999
Cutlery	11,142
Firearms	7,953
Files	49
Iron and steel manufactures, all other	6,387
Total	$1,888,309

The importations of foreign iron and steel for the year amount to 50,073 tons, mostly in a manufactured shape, as in tin plate, which makes up roughly two fifths of it. It averages a little over $36 a ton. Comparing 1891 and 1892, there will be found a notable falling off in nearly every item. Thus there is a decline of about 40 per cent. in the imports of pig iron, a falling off of more than one-half in those of scrap iron, of about one-half in those of bar iron. The imports of steel ingots were nearly the same. There was a large increase in the imports of American pig iron, which amounted to 6,388 tons, something phenomenal of late years.

The total imports of pig iron for the year have been as follows:

	Tons.
Foreign	7,824
Eastern	6,388
Oregon	350
Total	14,562

Imports, &c., of pig iron for 1891 were 16,372 tons, so that we have fallen off in this respect about 2000 tons. The stock on hand is about 9000 tons, leaving the consumption of the year about the same as it was in 1891. The price of pig iron dropped $3 per ton during the year, principally on account of the competition of the Alabama iron, which threatens to displace the foreign article entirely.

The business of the past two weeks has not been of very great volume, as the weather has been stormy and tempestuous. The outlook is, however, very good, and every one expects a year of very fair business. Good crops, partial solution of the transportation question—all conspire to that end. Nothing is now heard of houses selling out, although it was very freely rumored not long since.

Receipts by rail for the past two weeks have been as follows: 3 cars steel, 1 car grates, 1 car rakes, 2 cars iron, 3 cars

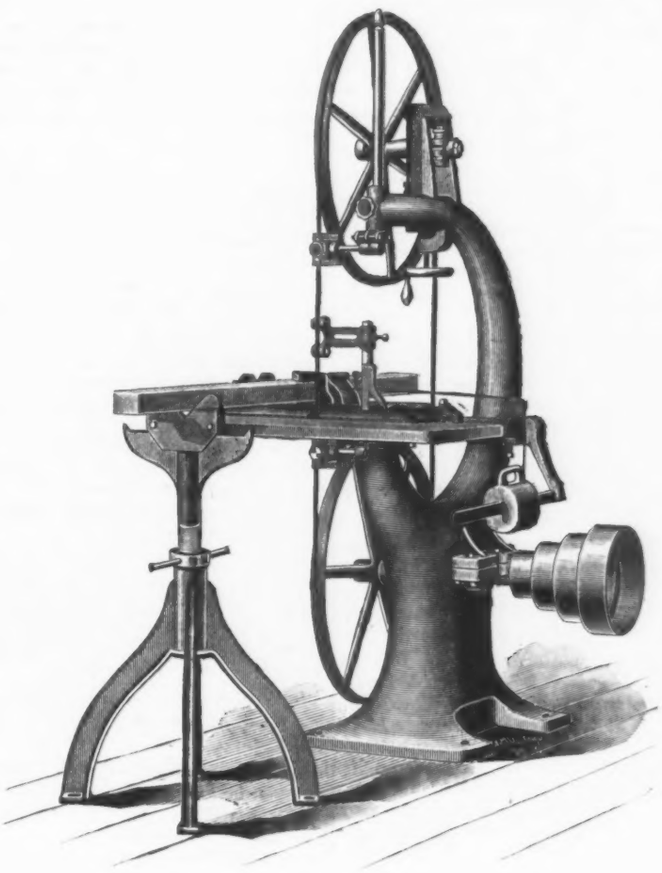
wire, 3 cars agricultural implements, 8 cars machinery, 2 cars steel plates, 2 cars harrows, 2 cars sheet iron, 4 cars hardware, 3 cars wire rope, 1 car wagons, 1 car ranges, 2 cars zinc, 1 car spelter; total, 39 cars.

The Cross & Speirs Band Saw for Metals.

This machine was specially designed by the Cross & Speirs Machine Company of Waterbury, Conn., for sawing metals. The saws are made with a patent flexible back, or, in other words, the teeth are very hard and the rest of the blade is soft. This feature of soft back enables it to run over wheels without breaking.

The automatic feed attachment, as shown in the cut, can be removed instantly, leaving the table free for scroll work or hand feeding. With this attachment bars of steel and iron up to 5 inches in diameter can be cut. The material is led to the saw secured in the chuck or carriage by the weighted lever, as shown. This weight can be quickly adjusted to give the requisite pressure. The weight feed not being positive, it brings the metal against the saw only as fast as the saw can clear itself. When long, heavy bars are to be cut, the end is supported in a cradle which runs on rollers, and can be adjusted to the right hight by the hand nut on the iron support. This need not be used on short work. The carriage or chuck also runs on rolls and is brought to the saw by the weighted lever. The cone shaft is geared back 4 to 1, with cut gears which are concealed in the base. There are four changes of speeds which adapt it to steel, wrought iron, cast-iron, bronze, aluminum, or any metal that can be filed or cut by an ordinary hack saw. Each machine is provided with two Wright non-friction band saw guides, one below and one above the table. The carriage frame also has a special guide with side rolls attached, which carries and directs the saw slightly out of its natural course, when it is necessary to cut long pieces, enabling the long end of the bar to project beyond the part of the saw going up on the other side of the wheels. In short work it is not necessary to use the extra guide, as the regular guide is brought down close to the metal and holds the saw firmly up to its work.

The feed can be placed on either side of the saw as is best adapted to the floor space used.



THE CROSS & SPEIRS BAND SAW FOR METALS.

The passage of the Fortifications bill by the United States Senate provides that the appropriation for the Watervliet Arsenal, at West Troy, N. Y., be increased from $500,000 to $750,000. This will help that important seat of gun manufacture considerably in its plans for a proposed output of war engines for the year from July, 1, 1893. The work which has been planned can now be accomplished. The number and different kinds of guns whose manufacture has been going on, and those that will be built, are 50 3.3 inch rifles, 24 3.6-inch rifles, 20 7-inch howitzers, 20 5 inch siege rifles, 12 8-inch breech-loading rifles, 23 10 inch guns, 15 12-inch rifles, and one 10-inch brazier and one 10 inch Woodbridge wire-wound gun. Of the 10-inch guns, three have already been completed and five others will have had the finishing touches applied by the last of the month. One big 12 inch gun will be sent to the trial station by February 28, and by May there will be five more ready for use. There have been up to date 12 of the 8-inch guns completed. The exhibit intended for the World's Fair is being made ready with all possible speed. As soon as the contractors shall have finished their work in the new south wing of the gun shop and the lathes and machinery have been placed in position for use, there will not be a plant in the country that can surpass the Watervliet Arsenal for the compactness of shops and facilities for rapid work.

The National Lead Company.

On December 7, 1891, the National Lead Company was organized for the purpose of taking over all of the assets of the National Lead Trust. The National Lead Trust had acquired properties, the value of which was, as originally assessed, $22,356,025, upon which they had issued certificates on the basis of four for one of real value, amounting to $89,424,100. The net earnings of the trust up to January 1, 1892 (when the properties were assumed by National Lead Company), after payment of the expenses of the trustees and the reorganization expenses, and deducting the distributions that had been made to certificate holders, increased the value of the net assets to $24,938,001.53, as follows:

Plant investment	$18,081,472.77
Other investments	406,821.33
Stock on hand—manufactured, in process and raw	5,468,170.88
Cash in banks	285,920.46
Notes receivable	339,916.45
Accounts receivable	1,414,229.48
Total	$25,996,531.37
Liabilities.	
Accounts payable..$707,165.59	
Mortgages 351,364.25	$1,058,529.84
Net assets	$24,938,001.53

By the terms of the agreement between the shareholders of the National Lead Trust, the capital of National Lead Company was authorized to be $30,000,000 ($15,000,000 each of common and preferred) the shareholders surrendering six shares of the National Lead Trust certificates for one each of common and preferred stock, which produced 298,081 shares. In addition were sold for cash 13 shares, making a total issue of 298,094 shares, divided and representing values as follows:

149,040 shares preferred stock, par value	$14,904,000
149,054 shares common stock, par value	14,905,400
Total	$29,809,400

The issue of the remaining shares each common and preferred, to make the total of $30,000,000, and their sale for cash, was authorized, but it being necessary to dispose of them, they remain in the treasury.

A revaluation of the plant investment was made to adjust values to the authorized issue of $30,000,000 of stock of National Lead Company, which revaluation increased the plant investment by $4,870,098.47, as appears by the initial balance sheet of National Lead Company of the date it commenced business, January 1, 1892, as follows:

Assets.	
Plant investment	$22,951,571.24
Other investments	406,821.33
Stock on hand manufactured, in process and raw	5,468,070.88
Treasury stock, common ..$94,600.00	
Treasury stock, preferred 96,000.00	190,600.00
Cash in banks	287,220.46
Notes receivable	339,916.45
Accounts receivable	1,414,229.48
Total	$31,058,529.84
Liabilities	
Capital stock, common ..$15,000,000	
Capital stock, preferred 15,000,000	$30,000,000.00
Mortgages	351,364.25
Accounts payable	707,165.59
Total	$31,058,529.84

The following is a statement of the profit and loss account for the year 1892:

Net earnings	$1,906,936 36
Out of which were paid four quarterly dividends, as follows	1,043,280.00
Leaving a balance to the credit of profit and loss account of	$863,706.36

At the close of the fiscal year, or on January 1, 1893, the financial condition of the company is shown by the following balance sheet:

Assets.

Plant investment, January 1, 1892.	$22,951,571.24	
Construction during year 1892	290,349.34	
		$23,241,920.58
Other investments		431,526.40
Stock on hand—manufactured, in process and raw		5,492,999.54
Treasury stock:		
Common	$94,600.00	
Preferred	96,000.00	
		190,600.00
Cash in banks		444,140.57
Notes receivable		202,849.18
Accounts receivable		1,287,262.42
Total		$31,291,298.69

Liabilities.

Capital stock:		
Common	$15,000,000.00	
Preferred	15,000,000.00	
		$30,000,000.00
Surplus, 1892		863,706.36
Mortgages		153,728.25
Accounts payable		273,864.08
Total		$31,291,298.69

It will be noted that the mortgage account, which at the inception of the business was $351,364.25, has been reduced by payments amounting, during the year 1892, to $197,636, and on January 1, 1893, but $153,728.25 of this account remained unpaid.

Authority was given by the shareholders to the directors to issue $3,000,000 of debenture bonds "for the purpose of providing for the redemption of $371,364.25 mortgage" on different parts of the real estate, $149,487.36 to be used to reimburse the trustees for cash moneys paid for properties acquired since the organization of the trust, and the balance to be held in the treasury of the New Jersey corporation, to be disposed of to acquire additional capital for carrying on the various businesses.

So far it has not been deemed expedient or necessary to issue any portion of these bonds, the better conditions prevailing in the present form of management rendering it unnecessary to use additional amounts of capital. It was also concluded that it would be better to pay off the mortgages gradually. The accounts payable of this company January 1, 1893, practically represents ores, bullions and supplies of various kinds, in transit.

The volume of business for the year exhibits a material increase over the preceding years. A large amount of money was expended by the National Lead Trustees, and since by the National Lead Company, in perfecting the smelting and refining interests, practically rebuilding all its great furnaces. White lead factories disadvantageously located, or unable, from any cause, to make their goods satisfactory, and on an economical basis, have been discontinued, while others have been greatly enlarged, so that the capacity for production of all classes of goods manufactured by the company has been decidedly increased. The progress of improvement in perfecting machinery to produce better goods on a cheaper basis has been continued.

The entire country has been redistricted and placed in charge of thoroughly competent managers, trade has been solicited and cared for by experienced salesmen.

Having smelters in New Mexico, Colorado and Missouri, factories for manufacture in all the great cities and commercial points, forming a continuous chain through the country from St. Louis and Chicago to New York and Boston, the company claims to be advantaged by each locality and can deliver goods at a minimum of expense for transportation and other charges.

All the old certificate holders of the National Lead Trust have converted their certificates into stock of the National Lead Company, excepting 3,720 shares, or four tenths of 1 per cent.

THE WEEK.

The timber resources of Canada are being exhausted more rapidly than before since the export duty in logs was abolished. Mills on the Canadian shore of Georgian Bay and Lake Huron have been shut down and the material on which they used to operate is rafted across the lake to give employment to Michigan lumbermen and sawmills. Some Ontario villages have lost almost half of their inhabitants in consequence. Both logs and men are gone from the country. The budget speech just delivered in Parliament intimates that the Government intend to take means to preserve the forest resources.

The production of cypress lumber in Louisiana and Arkansas is becoming important. In Delaware cypress logs are obtained by probing with a long pole in the swamps.

A company made up principally of gentlemen in Denver and Kansas City is pushing with vigor a railroad from the City of Mexico to Plazada Bay on the Pacific Coast, which will intersect "one of the richest mineral and agricultural regions of the country south of the Rio Grande." The immense coal fields at Coicoyan become the property of the railway company.

John Huntington of Cleveland has bequeathed $700,000 to be used in building an art and polytechnic school in that city, and a further sum of $800,000 as an endowment fund for it.

A treaty has been formulated for the annexation of Hawaii to the United States, and for the purposes of government extending to that country the laws now in force in Alaska. The royal family are to be pensioned and the indebtedness incurred by Hawaii in England shall be assumed by the United States, compensation therefor to be obtained by appropriating the revenues of the islands, said to be about $10,000,000 per annum.

A New England syndicate has purchased Texas timber lands valued at $750,000.

It is understood that the City of New York was recently fitted out with new propellers having three blades each, and great speed was expected as the result of this change. The new propellers, however, instead of adding to her speed, retarded her almost 3 knots an hour. She arrived in New York last week 15 hours behind her rival, the Majestic of the White Star Line.

There is no direct trade between the United States and Paraguay, although American merchandise received by way of Montevideo and Buenos Ayres is preferred to European. The consul there says that a sample house should be established in that country where American goods can be displayed and ordered through one large shipping firm.

The Manhattan Railroad has lost an important suit. Judge Ingraham of the Supreme Court decided on February 13 that the company should pay into the City Treasury 5 per cent. of the net receipts from 1880 to 1890, and also from this time forward. The amount will aggregate about $2,000,000. Judge Ingraham's decision relieves the city from all responsibility for damages in suits instituted by property holders against the elevated road. The company will appeal from this decision.

Carroll D. Wright was confirmed as United States Commissioner of Labor.

Banks, trust companies and other corporations loaned on real estate in New York and Brooklyn last year $68,000,000.

Boston paid for street illumination last year $582,000. There are in the city 13,136 lamps, of which 8743 are gas, 1547 electric, and 2846 naphtha.

The Ottawa *Official Gazette* 14th inst., announced the canal tolls for the season of 1893. The discrimination against United States shippers is removed.

A financial writer remarks: Where the country is drifting in the matter of its currency is forcibly shown by comparing the ratio of note obligations payable in gold to the gold available for their redemption February 1, and upon the date nearest that of the Sherman silver act:

	July 1, 1890.	February 1, 1893.
Note obligations	$346,800,000	$474,800,000
Net gold in treasury	191,500,000	108,200,000
Ratio gold to notes	55 per cent.	23 per cent.

The gold balance has fallen 43 per cent., while the note obligations have increased 37 per cent,, all on account of the issue of $128,000,000 notes under the law of 1890.

Mr. Giffen, the English statistician, has given some recently compiled figures of the cost of strikes in Great Britain before the English labor commission. During the years 1890 and 1891 he estimates that a sum of nearly $13,000,000 was lost to wage earners in England by strikes, without bringing into the reckoning the loss caused by the consequent diversion of trade into different channels.

Papers on file in the Surrogate's office in this city show that the valuation of Mr. Gould's personal property expanded from $500,000, as reported to the Tax Commissioner's office in recent years, to $70,000,000 at the time of his decease.

The mail carrying pneumatic tube in Philadelphia successfully endured the official test.

A bill prohibiting the employment of non-resident alien laborers in the United States is pressed upon Congress by numerous labor organizations. It is designed to prevent the periodical migration of workmen from the old country.

The decline taking place in the export trade of the United States is made apparent in the following comparison of the outward movement of leading staples in January for three consecutive years:

	1893	1892	1891
Cotton	$19,583,638	$28,732,225	$35,088,339
Breadstuffs	13,567,068	30,247,281	9,718,586
Provisions	10,361,319	12,187,846	11,185,583
Oil	2,788,474	3,247,223	3,312,225
Animals	2,139,158	2,831,197	2,294,850
Total	$48,439,657	$77,245,772	$61,549,583

The reduction in wheat exports is most noticeable, and this, although the exporting price from New York was 82 3 cents per bushel, as compared with $1.053 cents per bushel last year.

The report of the formation of a flour trust by Western millers is discredited in Buffalo. There are 28,000 mills in the United States, according to last statistics, about one half of which are spring wheat mills. This trust scheme has been attempted in years past, but without success, and spring wheat millers could not expect any better success, now, as competition is much keener in the spring wheat product than the winter wheat.

The Iron Age

New York, Thursday, February 23, 1893.

DAVID WILLIAMS, - - - PUBLISHER AND PROPRIETOR.
CHAS. KIRCHHOFF, - - - EDITOR.
GEO. W. COPE, - - - ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS, - - HARDWARE EDITOR.
JOHN S. KING, - - - BUSINESS MANAGER.

Manufacturers' Perplexities.

The Western jobbers and Eastern manufacturers of standard hardware have encountered a difficult problem. The trouble has grown out of the rapid development of important jobbing centers along the upper Mississippi and Missouri rivers and even further West. As long as Chicago and St. Louis houses dominated the West, even serving as depots for the supply of small jobbing houses on the frontier of civilization, there were no conflicting interests to disturb the relations of manufacturers and jobbers. Chicago, of course, resented the ambition of St. Louis in sending traveling salesmen into Northern Illinois, Wisconsin and Minnesota, while St. Louis felt aggrieved when Chicago salesmen were encountered in Southwest Missouri, Arkansas and Texas. Certain territory seemed to belong naturally to the merchants of a particular city. Its invasion by the representatives of a rival city was, however, a matter which concerned only the jobbers and did not involve the manufacturers.

The upper Mississippi and Missouri river jobbers have now become of sufficient consequence to change the situation very materially. They refuse, and have refused for some time, to regard themselves as secondary to Chicago and St. Louis, demanding to be placed on an even footing with the merchants of those cities and claiming territorial rights over trade.

The consequence is that manufacturers have been obliged to concede to their demands and to make prices lower for delivery to these comparatively new jobbing centers than the Chicago or St. Louis price, with freight thence added. In some instances it is known that Omaha, St. Joseph, Kansas City and Sioux City jobbers have secured Chicago or St. Louis prices on their deliveries. They are thus able to sell in competition with Chicago and St. Louis not only further West, as heretofore, but also to the eastward in territory in which their influence had been felt but slightly. It is not surprising that a vigorous protest is uttered by the Chicago and St. Louis merchants against the manufacturers' action in building up still further their young but active competitors.

Manufacturers say that the matter cannot be adjusted in any other way. They are not animated by any spirit of hostility to the jobbing interests of Chicago and St. Louis, but are compelled to recognize the growth of the wholesale trade in what were once known as frontier cities, but are now centers of populous sections. They are obliged to meet new conditions which they have not created, but which they find springing up. On the other hand, they say, if they were to adhere to a rigid policy of billing goods on board factory, with buyers paying freight thence to their own cities, they could be justly charged with refusing to acknowledge the importance of any jobbing center whatever.

Another consideration probably exists for the policy which they have adopted. By making prices for goods delivered in the far West as low or nearly as low as if delivered in Chicago or St. Louis, a strong incentive for the establishment of competing factories is removed. Manufactures are pushing West with sufficient rapidity now and the stimulus of very high prices, if full freight rates from factory were borne by jobber or consumer, would accelerate the movement unpleasantly for those who now have their money invested in such factories. It cannot be disputed that a fixed price to all comers, "f.o.b. factory," would be an ideal arrangement if it could be maintained, as all sections and all jobbing centers would then be placed on an even footing in their own immediate territory. But to complete such an ideal arrangement, a much more ideal condition would be necessary, namely, that there should be no change in the character of manufactured goods, no development of new manufacturing enterprises and particularly no springing up of competing manufacturing enterprises in the West.

Manufacturing Specialties.

A manufacturer of a line of standard goods had been complaining of the total lack of profits in his business to a sympathizing friend, when the latter was struck by a brilliant thought and asked, "Why don't you take up a specialty and drop staple articles that everybody is making?" The unexpected reply was, "There is too much competition in specialties themselves." We venture to say that this idea is as new to a majority of our readers as it was to the man who asked the question. But, with comparatively few exceptions, it is too true. The mechanical genius who can at this time devise some novelty which does not come in direct competition with something else capable of doing the same thing or answering the same purpose is a genius indeed. Take small wares, for instance, such as are used in the kitchen. The ingenuity of inventors has been racked to get up numberless devices for beating eggs, for sifting flour, for grinding coffee, &c. Appeals are mutely made by every form of apparatus to the housewife's neatness, celerity, mechanical taste or curiosity, but there are so many articles of such totally different kinds warranted to do the same thing precisely in the most satisfactory way that she is bewildered and is as likely to select the least efficient as the best. The same remarks would apply to mechanics' tools, to personal furnishings, to wagon and carriage supplies, to so-called railway specialties, &c. There was a time when labor-saving automatic machinery began to take the place of toilsome hand labor, when a man of acute perception and mechanical knowledge could easily see an opportunity for the invention of a device which would save labor, economize time, cheapen production and perhaps improve the quality and appearance of an article in quite common use, and the practical development of the thought brought him into prominence as a manufacturer of specialties, and perhaps in time made him wealthy, but to-day such opportunities are few. The ground has been pretty thoroughly covered.

Mechanical talent at this time seems to be turning in a totally different direction. The capabilities of machinery having been very thoroughly developed and opportunities for new applications being discouragingly rare, the most notable achievements making seem to be in the direction of cheapening the production of staple articles. This is the keynote of the manufacturers who are now most successful. The search for specialties is not alluring, as specialty competes with specialty, and consumption is perforce limited. In staple articles, however, there is a constant trade. The manufacturer, therefore, who surpasses his fellows in the cheapness with which he can turn out staple articles of equal quality surpasses them also in securing a large share of the trade and better profits. Never before has mechanical genius so applied itself in this country as now to the solution of the question, how shall the cost of production be further decreased by the introduction of more efficient machinery?

Locating Tools in a Shop.

No more important question confronts the manager of a shop than that of properly arranging his tools—to so place each machine as to permit it to be worked continuously and to its full capacity, and to require a minimum expenditure of time and labor. The solution becomes simple when work of the same character is done month in and month out; then the tools can be so placed that the work is under no circumstances compelled to retrace its steps, but moves constantly from the pattern shop toward the shipping room. But the problem becomes exceedingly difficult when the work passing through the shop varies frequently, and when the necessary machine work differs with each piece. This happens in every large establishment, and is particularly the case in shops building tools to order or from special designs.

Grouping all the tools of the same kind—lathes, planers, milling machines and so on—together, is, in the majority of cases, a poor plan, since about the only thing that can be said in its favor is that it presents a neat appearance. The only way to consider the question is to think of each tool solely as a device for doing work, and to so place it that it can always be run to its full capacity. In most cases the nature of the work requires the employment of different tools, and if they are placed far apart the cost of production is increased by the expense of extra handling.

It is evident that the work done in each individual shop must control the placing of its machines. No two plants are alike, any more than their productions are alike. Therefore the manager of one establishment can derive benefit from the study of

another only from the hints he may receive as to the better disposition of his own tools for doing his particular work. It would not be to his best interest to copy exactly any other concern.

A suggestion of the advantages to be derived by the placing of tools where they can be operated best is to be found in the following extract from a recent paper by W. S. Rogers, read before the New York Railroad Club:

Taking, for example, the work on cylinders; planing, boring and drilling are the three distinct operations to be performed. If the planer is located near the boring lathe, and in proper position, and the radial drill is also within convenient range, very little transient labor will be required to perform the three operations. We also will find that the man on the boring tool can push along the planing and oversee the drilling, thus keeping all the machines in operation with the minimum of labor, and in equally rapid time as if it were done the old way, with one man to each machine, and one-third of them waiting for work to reach them, as would be the case if they were isolated.

The important gains made by such methods are almost wholly in time, and if nothing else is earned this alone is money saved. If a piece of work (a set of guides for example, of four driving-boxes) can be finished in six hours, it is the hight of false economy to allow the time to be lengthened out an hour or two longer because the labor element is too busy elsewhere to take it from the machine. Far better will it be to move the machine to a more convenient location.

Following the work on the various machines closely, and having them so placed in positions with reference to the travels of the many parts of work through the shop toward finish and erection, thus avoiding all back-lash, confusion, delays and clashing among employees, means low cost of production, harmony throughout the plant, fewer names on the pay roll, and large decrease in operating expenses, with increased amount of work performed every year.

We have in mind one shop doing large work which established a sort of "emergency" department. In this were put a large planer, boring mill, lathe, drill and slotter. These are placed in one end of the assembling room. It was the intention to do such large work of a special character as could not be carried out conveniently on the regular tools in the other departments. But it was soon found that the best way was to send all large castings direct from the foundry to this group of tools and there finish them. The consequence is that this department, instead of being idle a part of the time, as it was at first thought it would be, is crowded with work. The result is a lessening of the cost of doing the work, due primarily to the fact that several tools of different kinds are placed near together.

The repeal of the duty upon block tin is likely to be pressed before the close of the present session of the House. Representative Stump of Maryland, who represents one of the canning districts which suffer by the tin-plate duties, introduced a bill on the 16th inst. to repeal the duty of four cents per pound, which goes into effect on July 1 next. Chairman Springer of the Ways and Means Committee and Mr. Shively of Indiana, who reported the reduction of the duty on tin plate at the last session of Congress, both declare that the repeal of the duty on block tin is of prime importance.

CORRESPONDENCE.

The Hamilton Patent.

To the Editor: Referring to the article in your columns regarding Patent No. 206,319, for an improved journal box for rolling-mill pinion, we have to say: Letters patent were granted July 23, 1878, to Homer Hamilton and Brown, Bonnell & Co., of Youngstown, Ohio. Mr. Hamilton died in 1886, and his widow secured the interest owned by Brown, Bonnell & Co., and is now the entire owner of the letters patent. The journal box protected by these letters is a solid one, with two grooves for suet and water, the sides of these grooves being raised to assist in holding the babbitt while the journal is filled. We claim that cutting our boxes in two and placing them in the pinion housing in the same manner as though they had not been cut, does not evade our patent or the claims under it. The claims of our patent are as follows:

1. A journal box in one piece of metal, lined as deecribed, having the grooves, the end shoulders, and the round lining-bearing at the inner end of the shoulder of the pinion.

2 A journal box constructed substantially as herein described, having a perpendicular hight equal to the diameter of the pinion of a rolling mill, whereby the several boxes when in place will be equal in hight to the pitch line of the several pinions, to obtain the advantages stated.

4. A journal box in one piece of metal, lined as described, having the top interior grooves formed by the longitudinal box-ridges in the manner and for the purposes set forth.

3. A journal box of one piece of metal, lined and having the top grooves formed as described, in combination with the housings and the pinions of rolling mills, all constructed substantially as and for the purpose described.

Every user of the above journal box and of all infringements has been warned to desist from such illegal use. At the same time, a proposition offering reasonable terms of settlement to all parties innocently infringing upon the owner's rights has been made.

Regarding priority of use: Like other patents, there are many parties claiming to have used this device previous to the time letters No. 206,319 were granted; but the owner will show, at the proper time and place, that such assertions are without foundation, and the parties using or infringing this device will have the opportunity of proving their position. It is impossible to determine the validity of a patent through the columns of your paper, and the writers make this short statement for the information of those who might be interested.

H. HAMILTON,
F. JACOBS.

YOUNGSTOWN, OHIO, Feb. 13, 1893.

The Freight Rates on Old Material.

To the Editor: We have entered our protest, and suggest that all dealers and all rolling mills that sell or consume old rails, car wheels and axles, or scrap iron or steel of whatever name or nature, do also protest and write to Geo. R. Blanchard, chairman of the Central Traffic Association, office at 217 La Salle street, Chicago, Ill., before March 14, 1893, at which time there will be a meeting of the board, protesting against this advance of about 17 per cent. in the rate of freight on the above-mentioned scrap material over the rate on pig iron, as appears in new Tariff No. 74, which took effect February 13, leaving pig iron at the old rate as found in group 1, Tariff No. 13, in which pig iron, old rails, scrap iron and steel, borings, &c., always have been grouped, and freighted at the same class and rate. And we claim that under the Interstate Commerce law they cannot be separated without an unjust discrimination, which will not admit of the change that has been made in the new Tariff No. 74, as in the production of iron and steel all these commodities are used together in the same heats to produce manufactured iron and steel. It is quite patent that these about 60 railroads that are in it, in their zeal manifest to help the furnacemen move their pig iron, have stepped outside of justice and right, and have formulated and put into effect this No. 74 Tariff, which is a direct discrimination against all the dealers as well as the railroads themselves, unless they intend to "deadhead" their own scrap, which the formulators of this phenomenal No. 74 Tariff may not yet have seen; but it is there.

We are compelled to believe that, whoever were the makers of this departure from all former tariffs, their knowledge of the processes and materials from which iron and steel are produced is very limited. The depression in these trades and the low prices of iron and steel demanded a reduction in freight rather than a foolish and unjust advance.

Yours very truly,
C. A. HENDEE & SON.

MILWAUKEE, February 18, 1893.

PERSONAL.

Since the settlement of the strike at the Brooks Locomotive Works at Dunkirk, N. Y., the following changes have been made: Frederick H. Stevens appointed assistant to the president; Robert J. Kennedy, general foreman; Frank G. Woodman, acting foreman of erecting shop; William Burns, foreman of boiler department, in place of Frank B. Jackson, resigned; Fred. G. Bird, assistant foreman of boiler department. The works are gradually assuming their normal condition and everything is quiet.

Howard R. McLean, who has been superintendent of the Vulcan Iron Works at Wilkesbarre, Pa., and of the Pittston Engine & Machine Company, has become superintendent of the Link Belt Machinery Company of Chicago, and Thomas R. Griffith, who was for eight years mechanical engineer of the coal mines of the Pennsylvania road, has become engineer of construction with the same firm.

F. B. Richards, who has been manager of the blast furnace of the Buena Vista Iron Company, at Buena Vista, Va., for some time past, has severed his connections with that concern and is now connected with M. A. Hanna & Co. of Cleveland, Ohio, in their pig iron sales department.

James W. Weaver, recently chosen secretary of the Thomas Iron Company, Hokendauqua, in place of the late J. C. Knight, was last week elected treasurer to fill the vacancy caused by the resignation of W. C. Alderson of Philadelphia.

Oliver Williams, whose name has been coupled for nearly a generation with the management of the Catasauqua Mfg. Company, declined re-election at the recent annual meeting of the stockholders. Mr. Williams succeeded the late David Thomas as general manager in 1867, and was elected president in 1878. Mill A, with an annual capacity of 4000 tons of manufactured iron, was built in 1863. Since Mr. Williams has been connected with the company, mill C at Catasauqua has been erected; mill B at Ferndale purchased and rebuilt, and the large plate mill D erected, the entire plant having a capacity of 40,000 tons. The construction account was increased from $200,000 to $560,000, out of the earnings of the company.

OBITUARY.

LYMAN WETMORE COE.

The Hon. Lyman Wetmore Coe, president of the Coe Brass Mfg. Company, whose portrait we print, died suddenly at his home in Torrington, Conn., on February 9, aged 73 years.

Lyman W. Coe was the son of Israel and Nancy Wetmore Coe, and was born January 20, 1820, at Torrington Hollow; received a common school education, and attended the high school at Waterbury, Morris Academy and the school of W. W. Andrews of South Cornwall. He began as a clerk in Waterbury, where he remained until the spring of 1834, when he went to Wolcottville (now Torrington) and engaged in the store of Wadhams, Coe & Co. for two years; then went to Terryville, into the store of Lewis McKee & Co., merchants, and the first cabinet lock manufacturers in the country; was with them three years in all, being at home and connected with the manufacturing at the brass mill one year. He left there in the spring of 1841 and was appointed secretary of the Wolcottville Brass Company, which office he retained until the summer of 1845, when he resigned. He then took charge of a brass-wire mill at Cotton Hollow, which then belonged to the Waterbury Brass Company, and in the spring of 1846 was appointed secretary and treasurer of the Waterbury Brass Company, and the business at Cotton Hollow was removed to Waterbury. He was connected with this brass company from its formation in 1845 to May, 1863, and during that time was its general financial and business manager.

In the spring of 1863 he resigned at Waterbury and bought all the stock of the Wolcottville Brass Company and formed a new company under the name of the Coe Brass Mfg. Company, of which he was president at the time of his death. This company ranks among the first in the brass business in the amount of its productions and extent of its manufacturing ability.

Mr. Coe was also president of the Torrington Savings Bank, a vestryman in Trinity Church, Torrington, a member for 20 years of the Union League Club, New York, and a trustee of the Berkeley Divinity School at Middletown.

In 1845 Mr. Coe was elected to represent Torrington in the State House of Representatives, and to represent Waterbury in 1858. In 1862 he was elected to the Senate from the Fifth (Waterbury) District, and from 1876 to 1881 represented the Fifteenth District, the last two years being President of the Senate. In 1882 and 1884 he was nominated for Congress for the Fourth District, but was defeated.

On the 10th the Board of Directors of the Seventh National Bank of New York passed resolutions, Mr. Coe having been for many years a director in that institution.

At a special meeting of the Board of Directors of the Coe Brass Mfg. Company, held in their office, at Torrington, Conn., February 11, 1893, the following minute and resolutions were unanimously adopted:

The Hon. Lyman Wetmore Coe, president of this corporation, died suddenly at his home in Torrington, Thursday, February 9, 1893, aged 73 years.

In his death this corporation loses its founder, its first and only president.

Mr. Coe was naturally interested in the manufacture of brass, as his father, Israel Coe, had been among the first to introduce this branch of industry into the United States.

L. W. Coe was first actively engaged in this business in connection with the Wolcottville Brass Company, the first certificate of stock of that corporation having been signed by him as secretary, May 20, 1841.

In 1846 he removed to Waterbury, and from that time until 1863 was associated with the Waterbury Brass Company as its executive official.

In 1863 he returned to Torrington (then Wolcottville), and having acquired the entire capital stock of the Wolcottville Brass Company, organized the present corporation under the name of the Coe Brass Mfg. Company. At that time the business was not in a flourishing condition, but Mr. Coe's energy, foresight and ability, sustained by the cordial support and loyalty of his stockholders, who were of the best element among the Naugatuck Valley business men, soon placed the company in the first rank—a position which it has held until the present day.

LYMAN WETMORE COE.

The history of the corporation since that time is in general that of the entire brass business of the country, and especially that of the Naugatuck Valley, it having created and maintained a field peculiar to itself. The development of the present extensive plant from its modest beginning, under Mr. Coe's presidency, is one of the triumphs of the American industrial age. In his death the last of that circle of business men in the Naugatuck Valley who made the manufacture of brass a national industry has passed away.

The leading characteristics of Mr. Coe in his business relations were his pronounced convictions and courage in maintaining them; his quick perception of advantageous circumstances and ability in utilizing them; the thoroughness of his plans, his wide views of the commercial field, his cordial and trusted relations with his associates and the patrons of the corporation, and his genial and equitable dealings with his fellow officers and the employees of the company

The members of this board mourn his loss as that of an associate with whom they had ever been in the most cordial sympathy, a leader in whose sagacity they had placed especial confidence, and a personal friend to whom they had become deeply attached, and whose memory will ever be held by them in the warmest esteem.

Resolved, That the preceding minute be entered in the records of the corporation, that an engrossed copy be sent to the family of the deceased, and that copies be transmitted to the press.

Attest, CHAS. F. BROOKER, Sec'y.

CAPT. LEVI ALLEN.

Capt. Levi Allen died at Buffalo, N. Y., February 12. He was one of the oldest citizens, having gone there in 1806 from Herkimer County, where he was born. The larger part of his life was spent on the lakes. He was the first president of the Buffalo Steam Engine Company, being succeeded by Geo. W. Tifft in 1847. He had been Collector of the Port, a member of the Common Council, and was a prominent and respected man.

FREDERICK W. STEVENS.

Frederick W. Stevens, who died in England the latter part of January, was prominently associated with the hardware trade in New York from 1838 to 1872, at which date he retired from business owing to ill health, and has since resided abroad. He was one of the first manufacturers of skates in this country. The older hardwaremen will doubtless remember his large business in Gold street, near John, in skates and leather goods. It was the largest of the kind in the country. During the war he employed as many as 1000 men in the manufacture of military goods. He leaves three sons, one of whom is Walter B. Stevens of Pope & Stevens of New York.

A. J. SWEENEY.

A. J. Sweeney, for many years prominently identified with the business interests of Wheeling, W. Va., and the head of the firm of A. J. Sweeney & Sons, founders and machinists of that city, died at his home in Wheeling on Tuesday, the 14th inst. At the time of his death Mr. Sweeney was 66 years of age, and his illness was of comparatively short duration.

J. W. MOORE.

Col. J. W. Moore, a well-known coke operator of the Connellsville region, died at his home in Greensburg, Pa., on Sunday, the 19th inst. Mr. Moore is reported as being quite wealthy, leaving an estate valued at more than $1,000,000. His health has been failing for some time and his death was not wholly unexpected.

Another great irrigation scheme in Southern California contemplated by Minnesota capitalists is the reclamation of 250,000 acres in the Mojave Desert by the erection of a dam 170 feet high near San Bernardino to cost $1,500,000. The company propose to charge $40 an acre.

Argentina extends over a million square miles, or five times the size of France, with a population of 4,000,000, of whom 500,000 are crowded in Buenos Ayres. Good land can be rented at 1 shilling 8 pence, or purchased for £1 per acre. For farmer settlers of the ancient stamp of industry and virility, plus a little knowledge of Spanish or Italian, and with some solid capital, prospects are good.

The bill introduced in Congress taxing commercial drummers is vigorously opposed by the Travelers' Protective Association, whose headquarters are in St. Louis. There are 30,000 commercial travelers in the United States.

Scotch Warrant Statistics.

We are indebted to G. H. Hull, of the American Pig Iron Storage Warrant Company, New York, for the following statement relating to Scotch pig iron warrants from 1845 to date:

Year.	Extreme prices. Highest.	Extreme prices. Lowest.	Average number of furnaces in operation.	Production, in tons.	Stock at end of the year, in tons.
1845	.....	.....	94	475,000	240,000
1846	.....	.....	97	580,000	144,000
1847	.....	.....	89	540,000	80,000
1848	.....	.....	103	600,000	98,000
1849	53/	41/6	112	690,000	210,000
1850	51/	41/3	105	595,000	270,000
1851	44/9	37/6	112	780,000	350,000
1852	77/	35/6	113	775,000	450,000
1853	81/	49/	114	710,000	210,000
1854	92/3	63/6	117	770,000	120,000
1855	83/6	53/6	121	825,000	98,000
1856	81/	65/6	126	832,000	88,000
1857	83/6	48/6	127	915,000	157,000
1858	60/	52/	131	980,000	340,000
1859	59/	47/	124	950,000	390,000
1860	61/6	49/3	131	998,000	460,000
1861	52/	47/	123	1,050,000	578,000
1862	57/6	48/	120	1,080,000	676,000
1863	69/6	50/3	134	1,180,000	763,000
1864	67/3	49/3	134	1,160,000	760,000
1865	65/6	50/	136	1,164,000	652,000
1866	82/	51/	112	994,000	510,000
1867	55/6	51/6	108	1,031,000	473,000
1868	54/	51/6	114	1,068,000	568,000
1869	58/6	50/6	124	1,150,000	620,000
1870	61/6	49/9	126	1,200,000	690,000
1871	72/6	51/4½	126	1,160,000	490,000
1872	137/6	72/	115	1,080,000	194,000
1873	145/	101/3	123	993,000	120,000
1874	109/	71/6	96	806,000	96,000
1875	77/	57/6	117	1,000,000	170,000
1876	66/6	55/9	116	1,103,000	363,000
1877	57/10	51/6	103	982,000	505,000
1878	52/4	42/3	90	902,000	679,000
1879	66/10½	40/	88	932,000	745,000
1880	73/3	44/5	106	1,049,000	739,000
1881	53/9	45/	116	1,176,000	940,000
1882	54/1½	46/7½	108	1,126,000	836,000
1883	49/	42/10	110	1,129,000	835,000
1884	44/7½	40/10	95	988,000	821,000
1885	43/11½	40/7¼	90	1,003,000	1,050,000
1886	44/7½	37/11	83	935,000	1,183,000
1887	47/8	38/5½	80	932,000	1,228,000
1888	43/6	37/1	84	1,028,000	1,244,000
1889	64/10½	40/10½	84	999,000	1,035,000
1890	66/3	43/4	66	798,333	613,445
1891	59/	47/1½	51	674,425	579,677
1892	47/	40/	76	977,2 1	443,646

It will be observed that the stock is lower than it has been since 1876.

The Pennsylvania Railroad Company have issued their formal notice that the freight traffic alliance hitherto existing between that company and the New York & New England Railroad has been terminated and transferred to the New York, New Haven & Hartford Railroad.

The Canadian Government decides to postpone tariff reform until next year.

The Canada Atlantic & Plant Steamship Company have been organized at Halifax, with a capital of $1,000,000, to carry on business between Jamaica, Halifax and American points.

A statement compiled for the "London and General Freight Report" shows that at the beginning of this month there were laid up in British ports idle steamers to the number of 522, with an aggregate net register of 532,281 tons.

The development of Northern Mexico will receive a new impulse on the completion next July of an extension of the Mexican International line from Monclova to Sierra Mojada, one of the most thriving cities in that region and an important mining and agricultural center, within 35 miles of illimitable salt beds.

Immigration into the United States during January was 14,831, against an immigration in January, 1892, of 18,057.

Washington News.

(From Our Regular Correspondent.)

WASHINGTON, D. C., February 20, 1893.

The awards of the contracts for the 6700 tons of armor plate recently opened have been classified as follows, and will doubtless be awarded accordingly after the return of the Secretary of the Navy and the examination of the report of Commodore Sampson:

Lowest Bidders on Armor, February 14, 1893.

	Carnegie Steel Company. Nickel.	Carnegie Steel Company. Harvey.	Bethlehem Iron Company. Nickel.	Bethlehem Iron Company. Harvey.
Class A.				
Exhibit 1	.....	.....	$212,048.25	$235,282.09
Exhibit 2	$82,157.50	$95,340.34	.....	.....
Exhibit 3	.....	.....	212,048.25	235,282.09
Exhibit 4	82,157.50	95,340.34	.....	.....
Exhibit 5	.....	.....	212,048.25	235,282.09
Exhibit 6	82,157.50	95,340.35	.....	.....
Exhibit 7	.....	.....	321,976.00	355,010.40
Exhibit 8	78,705.50	91,266.30	.....	.....
Exhibit 9	80,143.00	93,023.00	.....	.....
Exhibit 10	24,934.00	29,548.40	.....	.....
Class B.				
Exhibit 1	.....	.....	457,892.50	561,281.30
Exhibit 2	90,017.00	102,065.51	.....	.....
Exhibit 3	311,145.00	340,321.00	.....	.....
Exhibit 4	86,864.00	98,498.56	.....	.....
Exhibit 5	84,909.00	96,277.00	.....	.....
Class C.				
Exhibit 1	.....	.....	337,351.95	371,711.31
Exhibit 2	335,724.50	371,088.10	.....	.....
Exhibit 3	.....	.....	127,761.00	140,904.20
Exhibit 4	81,151.00	96,775.00	.....	.....
Class D.				
Exhibit 1	73,587.50	84,955.50	.....	.....
Class E.				
Exhibit 1	107,792.50	130,573.30	.....	.....
Exhibit 2	34,750.00	42,534.00	.....	.....
Class F.				
Exhibit 1	.....	.....	31,744.00	31,744.00
Exhibit 2	.....	.....	23,809.00	23,809.00
Exhibit 3	.....	.....	73,500.00	73,500.00
Total amount of lowest bids	$1,636,195.50	$1,862,896.69	$2,010,179.20	$2,263,806.48

The report of Lieut. Dashiel, U. S. N., in charge of the Naval Proving Ground at Indian Head, Potomac River, has been received, and shows the following results:

One 14-inch nickel steel Harveyized armor plate. Four shots fired. Projectile used, Holtzer 500 pound armor-piercing shot.

First shot.—Velocity, 1472 feet per second; penetration, 3 inches.

Second shot.—Velocity, 1859 feet per second; penetration, 5 inches.

Third shot.—Velocity, 1959 feet per second; penetration, 6 inches.

Fourth shot.—Velocity, 2059 feet per second; penetration, 10 to 11 inches.

These results exceeded the most sanguine expectations of the naval experts. The Secretary of the Navy observed that with such a showing he would feel authorized to increase rather than decrease the ballistic tests required in the specifications under the recent bids.

At the Ordnance Bureau of the Navy it was said to-day that our American vessels of war, incased in such armor plate, would be more than a match for any ship in any foreign navy. This plate is regarded as the triumph of the age in modern armored ship construction. The new American navy now leads the world in design of hulls, resistance of armor, in speed of engines and in destructive power of armament. More is not required. A liberal policy of constructing additional ships of the armored class in a few years would enable the United States to defy the warlike nations of the earth in battle on the water. That ability has never been doubted on the land.

Iron for Common Roads.

It seems rather strange that in all the discussion directed to the improvement of roads, of which recent years have been so prolific, the advantages, as a material for common roads, of iron have been so little considered; yet they are such as are possessed by no other material. Even in the best roads, as in city streets where tramways for street cars exist, one can always see truckmen endeavoring to use such tramways when the headway between successive cars is not so short as to compel too frequent changes to and from the iron rails. This shows the superiority of the iron surface as a bearing for the wheels of vehicles over any stone pavement yet devised, in a very practical way.

As to cost, at prices for which iron can now be bought, and which by continuous improvement in its manufacture are likely to be kept at a moderate figure, it may well be questioned whether engineering and inventive skill could not devise a plan for wheelways on common roads rivaling in cheapness the cost of any other road of equal durability.

The term "wheelways" implies a composite road into which iron enters only as a support for vehicles. It is admittedly not a good material for horses to travel upon, affording as it does an insecure foothold, especially in icy or muddy weather; and, besides, even if some particular construction of bearing surface or of horse shoes could be made to obviate these objections, it is only by the use of cheaper material in all parts of the road, except rails or plates for wheels, that excessive cost could be avoided.

It hardly needs saying that any good road will be maintained only where the traffic over it is important enough to justify the expense of its construction and main-

tenance. But as regards the extent of traffic some parts of the United States now begin to rival that in thickly populated parts of Europe, and it is only such a condition that can invite experiment with iron wheelways.

Let us take as an example such a street as was Broadway in New York City before its present street railway existed. The street was paved with hard stone blocks after the manner known as the Belgian or Russ pavement. This paving, notwithstanding it is the best ever discovered or invented for heavy trucking, was at most constantly undergoing repair in some part or other of the street. This repairing obstructed traffic greatly wherever it was going on, compelling teams to make a circuit through side streets to pass the point where the street was torn up, and the blocking of streets thus unduly burdened with traffic was a frequent occurrence. It was not the tread of iron-shod feet of horses that wore in the surface of the roads, the pits or hollows that finally necessitated repaving, but the blows of the truck wheels impelled by powerful springs, pounding constantly with a working force not easily conceived possible, except when carefully computed, that wore these pits and gullies. An incipient hollow thus begun wore faster and faster as its increasing depth afforded greater distance for wheels to acquire velocity before delivering the blow. Suppose now that lines of flat iron plates had been laid as ways for the wheels with intervening stone surfaces for the tread of draft animals. The wheels running upon the smooth upper surfaces of these plates would have delivered no blows; the draft of vehicles would have been greatly reduced; the noise of wheels would have been greatly lessened and the necessity for repairs would have been infrequent as compared with what was and still is required, this necessity being rather increased than diminished by the street railway lines. These with their short headway compel the trucks to run more at the side of the street than formerly and thus confine the wear to narrow limits.

Much might be said upon the effect such iron wheelways would have upon the durability of vehicles; but a mere allusion to this point, that can scarcely fail to be obvious to any one, is quite sufficient.

Of course details must be thought of and carefully worked out and improvements suggested by experience must be made before the use of iron in the way generally indicated for common roads can be brought to a high degree of perfection. The street railways have set the example, and for the lumbering, uneasy, noisy omnibus we now have the far more convenient and capacious street car. If for this kind of traffic iron wheelways have proved so profitable, can any one claim that a proposal to use them in modified form for other vehicles is either impracticable or visionary?

The firm of Sweet & Billings, of Cohoes, N. Y., dealers in manufacturers' supplies, has been dissolved, Mr. Billings retiring. His place will be filled by Edward C. Doyle. Mr. Billings will be superintendent of a knitting company at Mohawk, N. Y.

The new German field artillery is represented to be terribly destructive, partly due to the explosive power of the shell. The gun might, perhaps, be better described as an enlarged rifle, for that is what it really is. The barrel is made of cast steel, with a caliber of 8 cm. and the total weight of the gun, limber and carriage is slightly less than that of the old artillery weapon. Being lighter, the mobility of the new gun will, of course, be considerably increased. The limber and gun carriage are made of iron and iron plates.

MANUFACTURING.

Iron and Steel.

The Wheeler Furnace Company of Sharon, Pa., have just put in operation Alice Furnace, at Sharpsville, which has been idle for some time past. The report that Ella and Fannie Furnaces, at West Middlesex, operated by this concern, and which have been idle some months, would be put in blast at an early date is without foundation. At this time it cannot be stated when these furnaces will resume blast.

The Robingson Mfg. Company of New Brighton, Pa., have been granted a charter with a capital of $25,000 for the purpose of engaging in the manufacture of iron and steel. The incorporators are C. C. Robingson, E. C. Lavers and L. R. Strobridge, all of New Brighton, Pa.

A number of changes have recently been made in the *personnel* of the Hubbard Iron Company, at Hubbard, Ohio. W. F. Bonnell, who has been manager for the past two years, has resigned his position and has been made general salesman for the concern, with headquarters in Youngstown, Ohio. Geo. Wilson, bookkeeper, has assumed the position of manager, and the duties of shipping clerk will be discharged by R. J. Hutchings, at present timekeeper.

The Falcon Furnace of Brown, Bonnell Iron Company which was blown out a few days ago will be torn down. The Falcon is one of the oldest blast furnaces in the State. A new furnace will be erected on the site of the Falcon, which will be one of the largest in the valleys. It will be furnished with every modern improvement that will aid in producing a large quantity of iron.

The Ohio Steel Company of Youngstown, Ohio, are contemplating the increase of their capital stock from $750,000 to $1,000,000. The additional $250,000 will be taken by a foreign capitalist, but it is stated upon good authority that he is not Samuel Mather of Cleveland. The law relating to corporations provides that the capital stock cannot be increased unless the original stock has been all paid up. In the case of the Ohio Steel Company the stock has not yet been paid up, but is only paid as it is needed. Representative John R. Davis of Mahoning County has a bill before the Ohio Legislature now which provides for the amending of the law so that corporations may increase their capital whenever they so desire. The bill will likely pass. The Steel Company have let the contract for boilers to the National Water Boiler Company of New Brunswick, N. J. The contracts for the machinery and appliances have also been let.

The Mattie furnace plant of the Girard Iron Company is now one of the most modern in the country. A large iron casting house has recently been erected and the whole outfit has been put in first-class shape—new stock house, boiler house and engine house equipped with large engines. The product has been increased to 230 tons per day.

The Falcon Iron & Nail Company's new sheet and tin mills at Niles are rapidly nearing completion. The works are being equipped with the best appliances, and will be one of the model tin mills in the country. The plant covers five acres of land. It will be completed some time next month, and it is expected to start it up not later than April 1.

The Stewart Iron Company's furnace at Sharon, Pa., has been doing very good work since she was started up. The company spent a large amount of money fitting the plant in first-class shape. The furnace is making 150 tons of Bessemer iron per day. The other furnace owned by this company has been idle for some time and will remain so indefinitely.

The two new 12-inch and 18-inch rolling mills which the Brown, Bonnell Iron Company are erecting will be the largest and most complete rolling mills in the State of Ohio. The iron frame work is all finished, and the machinery will soon be placed in position.

The Shelby Steel Tube Company and the Shelby Cycle Mfg. Company, of Shelby, Ohio, have consolidated their interests, and will hereafter carry on business under one management as the Shelby Steel Tube Company. The capital stock has been increased to $400,000, and 225 men are now employed. Considerable money has been expended on the plants, which are now among the most complete and modern in the country.

The Reading Rolling Mill Company of Reading, Pa., announce a reduction in their puddlers' wages from $3.50 to $3 per ton, and of all other mill hands 15 per cent.

The Phœnix Horseshoe Company are pushing the erection of their new works at Joliet, Ill. The building force is engaged overtime and on Sundays, with the intention of getting ready for manufacturing operations at as early a day as possible.

The Joliet Sheet Rolling Mill Company of Joliet, Ill., manufacturers of sheet steel exclusively, whose works have been shut down several months, owing to differences between stockholders, have adjusted their disagreement and will begin to roll sheets again early in March.

Furnace G of the Carnegie Steel Company, Limited, at Bessemer, Pa., which has been idle for some time undergoing repairs, was put in blast last week. This furnace has practically been rebuilt, 10 feet being added to the stack, making it the same hight as furnaces H and I.

At a meeting of the stockholders of the Youngstown Steel Company, held in Youngstown, Ohio, last week, the following board of directors for the ensuing year was elected: George Tod, Henry Tod, E. L. Ford, Tod Ford and Paul Jones. The directors organized by electing George Tod, president; Tod Ford, vice-president; E. L. Ford, general superintendent, and John Stambaugh, secretary and treasurer.

Machinery.

The Standard Scale & Supply Company of Pittsburgh have received a contract from the Ohio Steel Company of Youngstown, Ohio, for the building of an 80-ton suspension railroad track scale.

The first of the six 1000 horse-power engines being built for the World's Fair by the Westinghouse Machine Company of Pittsburgh has been built, and will soon be shipped to Chicago. This engine will run at a speed of 200 revolutions per minute, and with a boiler pressure of 150 pounds will develop about 1200 horse-power.

At a meeting of the stockholders of the Leechburg Foundry & Machine Company held in Pittsburgh last week, the old board of directors and officers were re-elected for another year. The business of this concern for the past year was much heavier than in any one previous year in their history, and the outlook for this year is exceedingly promising. At the above meeting it was decided to make some extensive additions to the plant, which will considerably increase their capacity. An addition, 60 x 100 feet in size, will be added to the machine shop, and two batteries of boilers will be erected. Extensive improvements will also be made in the foundry department, and by April 1 next the concern expect to cast and finish all sizes of chilled rolls up to 30 inches in diameter. Heretofore the firm have been furnishing only such rolls as were required for new trains which they built, but this new branch will now be made one of the leading departments of their business.

The E. P. Allis Company will build a new blowing engine at one of the Lucy furnaces in Pittsburgh. The steam cylinder will be 42 inches in diameter with 60-inch stroke, and the blowing cylinder 84 inches in diameter and 60-inch stroke, with positive inlet and outlet valves in the latter. The old engine of another design, which is being dismantled, has been in service for over 20 years.

The copartnership heretofore existing between J. G. Hendrickson and F. J. Clamer, under the name of the Ajax Metal Company, is dissolved by mutual consent. The property and interests of said copartnership have been acquired by the Ajax Metal Company, Incorporated, who will continue business with the following officers: J. G. Hendrickson, president; Francis J. Clamer, vice-president, and J. R. Nelson, secretary and treasurer.

The Mackintosh-Hemphill Iron & Steel Company of Pittsburgh, with a capital stock of $1,000,000, were granted a charter last week. The direcrors are James Hemphill and Pennock Hart of Pittsburgh, William Wade of Hulton, and David E. Park and Campbell B. Herron of Allegheny. This new concern succeeds the old and well-known firm of Mackintosh, Hemphill & Co., Limited, who have done a general foundry and machine business in Pittsburgh for many years.

In accordance with their usual custom, H. K. Porter & Co. of Pittsburgh, builders of light locomotives, last week made their eighth annual voluntary distribution of money to their employees. The amount received by the employees ranged from 8 to 12½ per cent., according to the yearly salary paid to each workman. In each envelope enclosing the contribution was a letter from the firm addressed to each employee, which read as follows: "We are especially gratified that the amount distributed is not decreased, as we supposed it would have to be. Prices were less throughout the year than in 1891, and the output for the first six months was very small. But as soon as the demand increased the output largely increased, and by your efficient co-operation we largely recovered the lost ground. This proves to us

what we believed before, that practical co-operation is a positive benefit to every one of us. We have often said to you that it is only on this basis that we can hope to make such distribution a permanent annual thing. But such reasonable return to us only makes us the more gratified to recognize your efficient and cheerful service, and to be able to give you this additional remuneration for your faithful labor."

The Detroit Foundry & Equipment Company will locate an extensive manufacturing establishment at Chicago Ridge, a suburb of Chicago. The company will erect two buildings, each 90 x 175 feet, to be constructed of stone and brick, and will cover the balance of the 15 acres they have secured with new buildings as rapidly as possible. It is announced that about $100,000 will be expended in buildings and equipment during the year. About 200 hands will be employed at the outset.

J. J. Tonkins has returned to Oswego, N. Y., from the West, where he has been for the purpose of purchasing machinery for the machine and boiler factory which is to be started at Oswego. The machinery has all been ordered and is expected to arrive and be ready to run in a little over two months. The plant is to be hydraulic throughout and composed of the following machines: A heavy hydraulic pump to furnish pressure for the tools, manufactured by H. K. Worthington of New York; a heavy 220-ton flanging machine; several hydraulic cranes. The work of erecting the plant is being pushed as rapidly as possible. It will cost the Tonkins Boiler Company considerable more than was expected on account of the enlargement of the buildings and the placing of heavier and better machinery in the plant than was at first contemplated. It is expected to have the plant in running order by June 1.

William A. Grippin went to Troy, N. Y., recently. He is president of the Troy Malleable Iron Company and is also treasurer and general manager of the company's large plant at Bridgeport, Conn. Mr. Grippin, with his associates, William Heicher and Waldo K. Chase, is systematizing the new plant of the company at West Troy, which they claim when completed will be one of the largest and best equipped malleable iron foundries in the United States. The new works are already being run at their full capacity.

Manager Flack of the La France Fire Engine Company of Elmira, N. Y., denies the rumor that the company had sold out to the Silsby Fire Engine Company of Seneca Falls, N. Y.

The River Machine & Boiler Company of Cleveland, Ohio, with a capital stock of $75,000, have been granted a charter of incorporation for the purpose of manufacturing and dealing in machinery, boilers and engines. The incorporators are: Matthew Thomas, Thomas R Teare, Albert J. Harris, Virgil P. Cline and S. H. Tolles.

The Hydraulic Machine Company of Pittsburgh have just completed the hydraulic appliances for the large lift to be put in the marine department of the plant of the Maryland Steel Company at Sparrow's Point, Md. The weight of the lift is 120 tons, and the total stroke 80 feet. There are two cylinders connected with it, the smaller one being 14 inches in diameter and the larger one 18½ inches in diameter, all having a stroke of about 20 feet. The lift was designed by the marine department of the Maryland Steel Company.

The Westinghouse Electric & Mfg. Company of Pittsburgh have received the contract from the Lindell Street Railway Company of St. Louis, Mo., the largest street railway corporation in that city, for the equipment of their plant with motors and generators. This contract is considered important for the reason that this railway company have for several years operated their lines with other electric street railway systems. The first order is for the equipment of 100 cars and for 2000-horse power electric generating apparatus. Since the first of January the above concern have received orders for electrical railway equipment to the amount of $2,000,000.

The Superior Machine Company, recently incorporated at Cleveland, Ohio, will manufacture electric railway supplies, motors, gears and pinions, automatic gear cutters, tools and general machinery. F. W. Bultman is president of the concern.

Wm. Tod & Co. of Youngstown are making plate-mill engines for the Riverside Iron Works, Wheeling, and an engine for the new armor-plate machine shop of the Carnegie Steel Company, at Homestead, Pa.

The Miller Foundry Company of Youngstown, Ohio, have a large order for rolls from the Union Iron & Steel Company and the Reeves Iron Company.

The Salem Iron Works of Salem, N. C., contemplate starting a boiler shop for making and repairing boilers, and will therefore want a set of boiler makers' tools, such as independent punch and shear, a set of boiler rolls and other fixtures necessary for a boiler shop.

Enterprise Boiler Company, Youngstown, Ohio, are building several boilers for the Calumet Iron & Steel Company, South Chicago.

Wm. B. Pollock & Co. are doing the iron work for the Clinton Iron & Steel Company of Pittsburgh, who are erecting new Cowper hot-blast stoves at their furnaces.

Among the recent transactions of the Morton Mfg. Company of Muskegon Heights, Mich., has been an order from the Thomson-Houston Electric Company of Lynn, Mass., for one No. 6 24-inch stroke key seater; from Edison General Electric Company, Schenectady, N.Y., for one No. 6 24-inch stroke keyway cutter, and for one of the same size from the St. Louis Machine & Iron Works, St. Louis, Mo. One No. 4 18-inch stroke has been sold to the Siemens Halske Electric Company, Chicago, Ill.; one 32-inch stroke reversible universal shaper to the Pennsylvania Steel Company, Steelton, Pa., and a 24-inch stroke shaper to the Automatic Boiler Feeder Company of Marion, Ohio.

Among recently authorized corporations in Illinois are the following: Magney-Cate Mfg. Company, at Freeport; capital stock, $50,000; for the manufacture of hardware specialties; incorporators, Rufus L. Cate, Joseph P. Magney and Clarence E. Calhoun. The Bradford Stove Company, at Chicago; capital stock, $100,000; for the manufacture of stoves and fittings; incorporators, Francis Jackson, Thomas E. Paxton and Arthur C. Conway. The Anderson Coke, Gas & Power Company, at Chicago; capital stock, $1,500,000; to purchase the patented inventions of James C. Anderson as far as they relate to coking coal and the recovery of the by-products therefrom; incorporators, J. C. Anderson, J. F. Anderson and J. C. Cushman. The Excelsior Machinist Company, at Chicago; capital stock, $10,000; for the manufacture of machinery, tools and merchandise; incorporators, Reinold F. Paulson, Jens L. Christensen and Jesse Cox. The Ludowici Roofing Tile Company, at Chicago; capital stock, $40,000; for the manufacture of clay; incorporators, Henry B. Skeele, Harris Pomeroy and Charles W. Allen. The Gillespie Mfg. Company, at Chicago; capital stock, $50,000; for the manufacture of burglar alarms; incorporators, Henry R. Gillespie, Thomas Robinson and Edward W. Gillespie. The Althouse Automatic Car Coupler Company of the United States and Canada, at Chicago; capital stock, $3,000,000; for the manufacture of cars, car couplers and railway supplies; incorporators, Henry Vincent, William Bannerman and John C. Amendt. Bracey Improved Spike Company, at Chicago; capital stock, $100,000; for the manufacture of railroad spikes and supplies and for general manufacturing; incorporators, M. J. Frost, B. M. Taussig and W. N. Williams. The Ruebs' Molding Sand Papering Machine Company, at Chicago; capital stock, $100,000; for the manufacture of sandpapering machines; incorporators, Lester A. Brown, Robert H. Wiles and Harry Bitner. The Lake Superior Fuel Gas Company, at Chicago; capital stock, $3,000,000; for the manufacture of fuel and illuminating gas, the erection of gas plants, and the erection and operation of plants for the production of electricity for light, heat and power; incorporators, Faye Walker, Robert H. Harris and L. B. Langworthy. John A. Brown Novelty Company, at Decatur; capital stock, $18,000; for the manufacture of hardware specialties and stamped goods; incorporators, John A. Brown, Lewis S. Bonbrake and James L. Thayer.

The contract to furnish more than a mile of turned Steel shafting, ranging from 3 inches to 6 inches diameter, with the necessary hangers, pillow blocks, clutches, &c., for Machinery Hall at the World's Columbian Exposition of 1893 has been awarded to Dodge Mfg. Company, Mishawaka, Ind. This contract will also include many of their Independence wood split pulleys and several of their American system Manila rope transmissions.

Miscellaneous.

On Friday of last week Robert L. Walker, president of the Youngstown Stamping Company, Youngstown, Ohio, and of the Girard Stove Works, at Girard, Ohio, made a personal assignment to H. K. Taylor of Youngstown, Ohio. As a result of the assignment of Mr. Walker, the Youngstown Stamping Company also made an assignment, and W. C. Hine, secretary of the concern, was appointed assignee. The Girard Stove Works also made an assignment, with assets stated at $30,000, and liabilities unknown. The Youngstown Stamping Company were established in that city on March 1, 1887, with a capital stock of $40,000, which was later increased to $50,000. When operations were first commenced only 25 persons were employed, but the business of the concern grew rapidly and at the time of the assignment about 150 persons were on the pay roll. The concern manufactured a general line of sheet-metal goods and glass oil cans. It is thought an arrangement will be effected whereby the plant will continue in operation under the management of W. C. Hine, who has been secretary since the organization of the concern.

At the annual meeting of the Indiana Car & Foundry Company, held February 7, the following directors were elected for the ensuing year: Major Collins of Brazil, Ind.; Emil Pollak of Cincinnati, Ohio; J. I. White of Ft. Wayne, Ind; F. J. Reitz of Evansville, Ind.; Archer Brown of Cincinnati; H. S. Chamberlain of Chattanooga, Tenn.; J. C. Fortiner of Indianapolis, Ind. The board elected the following officers: President, Major Collins; vice-president, Archer Brown; secretary and treasurer, Emil Pollak; general manager, J. C. Fortiner. The financial office of the company is in Cincinnati. Large contracts for cars have been taken, amounting in the aggregate to over $1,000,000. Among these are coal cars for the Pennsylvania Railroad, World's Fair passenger cars for the Illinois Central Railroad, and improved cattle cars for the Hicks Stock Car Company. The works now give employment to about 500 men, which will be increased to about 800 during the next 60 days.

When the molding shop for the Oliver Bros.' brass bedstead factory, at Lockport, N. Y., is completed, that city will have one of the largest plants of its kind in the country. The molding shop is a separate brick wing, adjoining the main building on the east. It is well under way and will be completed in a few weeks. At that time all of the machinery will have been placed in position.

The new Union Car Company, who were organized at Depew, N. Y., promises to be one of the largest manufactories in the new suburb of Buffalo. Plans are being made, and as soon as they are ready work will be begun on a plant which will be complete in every way. The buildings will be of brick and the machinery of the latest pattern. The car shops proper will have a capacity of 25 cars a day at the start. A portion of the plant will be a gray-iron foundry, from which the company will obtain all of their castings, and a car-wheel works which supply the plant with wheels. The concern will employ 1500 men. They have taken a tract of 40 acres, next to the Gould Coupler Works and between the Lehigh Valley and the Lackawanna tracks, switches being run to both lines.

Thomas Sands, Nashua, N. H., announces that he is prepared to enter into correspondence with parties desirous of using the Flanders process for tinning cast iron, which is stated to have been adopted by several large firms in this country. W. T. Flanders will superintend the building and starting of any new plants.

The plant of the Nubian Iron Enamel Company, at Cragin, a suburb of Chicago, was damaged by fire last week to the extent of $100,000.

It is stated that the business men of Chagrin Falls, Ohio, will organize a stock company with a capital of $50,000 for the purpose of manufacturing sad irons.

It is reported that the car shops of the Pittsburgh & Lake Erie Railroad, formerly located at Chartiers, Pittsburgh, but recently destroyed by fire, will be rebuilt at Youngstown, Ohio.

Birmingham, Ala., is making an effort to secure the location at that point of the Litchfield Car Manufacturing Company of Litchfield, Ind., which is looking for a Southern location. A committee has been appointed to confer with representatives of the company.

It is reported that the Union Steel & Iron Company of Youngstown, Ohio, will establish an extensive rolling mill plant at Ashland, Ky.

The main works of the Walter A. Wood Mowing & Reaping Machine Company, at Hoosick Falls, N. Y., have started up. Over 1000 men are now at work.

The Michigan Peninsular Car Company, embracing a plant worth $8,000,000 and employing over 5000 men, is about to be removed from Detroit to Chicago. The company are the largest syndicate in the freight car building line in the world. They embrace seven plants for the manufacture of every piece of material used in the construction of the car. Too high taxes is said to influence the removal.

A monster canal boat, 210 feet in length and 23½ feet wide, has been completed by Charles Hillman on the Delaware River to run between Philadelphia and Baltimore via the Chesapeake and Delaware canal She will be driven by a compound engine

TRADE REPORT.

Philadelphia.

Office of *The Iron Age*, 230 South Fourth St., PHILADELPHIA, Pa., February 21, 1893.

The week has not developed any new feature in the Iron trade, neither can it be said to have brought any improvement in prices. There is no actual scarcity of business, although in some lines there is a temporary dullness, owing to delays in sending in specifications. The general outlook appears to be fairly satisfactory, and on the whole the trade are inclined to expect a good demand, but they are not hopeful in regard to prices, which in many specialties are at the very lowest ever recorded. The flurry in regard to the Reading Railroad and its connections have been somewhat startling and may lead to further uneasiness locally, but it is not likely to go much beyond those engaged in handling its various securities. It is not a good feature, however, and for a while, at all events, capitalists will regard the situation with more or less suspicion.

Pig Iron.—The situation could almost be defined in the single word "unchanged," but even that will bear some little qualification. Prices are certainly unchanged, but it is open to doubt whether the feeling is as steady as it was a week ago. With some sellers it may be a little firmer, with others there is more nervousness and perhaps more of a desire to get out at some price. The best brands are handled without the slightest necessity for shading, but with others the supply is so liberal that buyers require coaxing, and when a sale can be made at last week's figures holders are quick to accept. The local trade appear to have covered pretty freely within the past 30 days, and while there is no extraordinary pressure to realize there is also an absence of demand, except for the general run of trade, which is chiefly for small and medium sized lots of standard qualities. The feeling in regard to the future seems to be that prices are not likely to be higher, and as there is a possibility of somewhat cheaper ores consumers require special inducements before they will negotiate for large lots. Until this feature in the situation becomes pretty well cleared up it is not likely that heavy transactions will be made, as producers are not in a position to anticipate lower figures, any more than consumers are under the necessity of discounting their future requirements. A fair general average of quotations are about as follows, for Philadelphia and near by deliveries and from 25¢ to 40¢ less for some Southern Irons for Harrisburg and intermediately to Baltimore:

American Scotch, No. 1X	$17.00	@	$17.25
American Scotch, No. 2X	16.00	@	16.25
Standard Penna. (Lake Ore), No. 1x	14.75	@	15.25
Standard Penna. (Lake Ore), No. 2x	14.25	@	14.50
Standard Virginia, No. 1x	14.75	@	15.00
Standard Virginia, No. 2x	14.00	@	14.25
Virginia and Southern, No. 1x. Soft	14.00	@	14.50
Virginia and Southern, No. 2x. Soft	13.25	@	13.50
Standard Penna. and Virginia Forge	13.00	@	13.25
Ordinary Forge	12.50	@	12.75

Bessemer and Low Phosphorus Pig.—Business is extremely limited in these Irons, prices being considered beyond the reach of what the local market will afford. Asking prices are $15.25 @ $15 50 at furnace for Bessemer, and $17.50 @ $17.75 for Low Phosphorus, but no sales have been made, so far as known, although negotiations are in progress for both grades.

Steel Billets.—The market is dull, and while sellers quote higher figures, they are making but little progress as regards sales. Small lots from Eastern mills are taken at from $24.50 @ $25 and upward, delivered, but for Western Steel there seems to be no demand at the figures asked, say about $24, delivered, Schuylkill Valley or equivalent points. Heavy purchases were made recently at 25¢ @ 50¢ less, and as material is not specially needed, consumers are inclined to postpone further engagements until the market shows more steadiness than it does at present.

Steel Rails.—Nothing specially new in this department. There is a pretty good—what may be called outside—demand for light Rails, Street Rails and special Rails for the Electric Roads, but in the general Rail trade the demand is only fair. Prices are steady at unchanged prices, say $29, f o.b. cars at mills.

Bars.—There is no change; everything is about as unsatisfactory as it is possible for it to be. The demand is slow and disappointing, while the competition for business is so close as to forbid the slightest attempt to secure better prices. Nominal quotations for best Refined Bars are 1.65¢ @ 1.70¢, but on large lots special figures would be made, but all depends on the kind of order that may be offered.

Skelp.—There is a fair demand, and several good sized lots have been taken during the past few days, but at prices that could hardly be given in print. Manufacturers quote 1.55¢ to 1.57½¢, delivered. Consumers say less than that; how much less depends on quantity, delivery, &c.

Plates.—There is no particular dullness in Plates, but there is a very decided weakness in prices. Every mill seems to want business, and as Pittsburgh keeps cutting under, there is no alternative but for others to meet their figures. Consequently there is great irregularity in quotations. In some instances, on special orders, actual selling prices are much below the asking prices, but for small lots ordinary quotations are about as follows:

	Iron.	Steel.
Tank Plates	1.80 @ 1.85¢	1.80 @ 1.85¢
Shell		2.00 @ 2.10¢
Flange	2.70 @ 2.90¢	2.30 @ 2.40¢
Fire Box	3.00 @ 4.00¢	2.50 @ 2.70¢
Special qualities		3.25 @ 3.75¢

Structural Material.—Mills are well supplied with orders, and while there is no particular urgency for more, competition is so sharp that prices seem to have no chance for improvement. Sales at about the following prices, according to specification, size of order, &c.: Beams, Channels or Tees, 2¢ @ 2.20¢, according to size of order; Angles, 1.85¢ @ 1.95¢; Universal Plates, 1.90¢ @ 1.95¢

Sheets.—There is a good demand, and while Common Sheets are quoted at very low figures, the best brands are steadily held at former quotations, viz.:

Best Refined, Nos. 14 to 20	2.75¢ @ 2.85¢
Best Refined, Nos. 21 to 24	2.90¢ @ 3.00¢
Best Refined, Nos. 25 to 26	3.15¢ @ 3.20¢
Best Refined, No. 27	3.30¢ @ 3.40¢
Best Refined, No. 28	3.40¢ @ 3.50¢

Common, ¼¢ less than the above.

Quotations given as follows are for the best Open-Hearth Steel, ordinary Bessemer being about ½¢ lower than are here named:

Best Soft Steel, Nos. 14 to 16	2¾¢ @ 2⅞¢
Best Soft Steel, Nos. 18 to 20	3¢ @ 3⅛¢
Best Soft Steel, Nos. 21 to 24	3¼¢ @ 3⅜¢
Best Soft Steel, Nos. 25 to 26	3⅜¢ @ 3½¢
Best Soft Steel, Nos. 27 to 28	3¾¢ @ 4¢

Best Bloom Sheets, ¼¢ extra over the above prices.

Best Bloom, Galvanized, discount....70 and 5 %

Old Material.—The demand is about the same as for some time past, and without change in prices, although the tendency is toward improvements in values. Sales at figures about as follows, varying according to quality, point of delivery, &c.: Old Iron Rails, $19 @ $19.50, delivered; Old Street Rails, $20 @ $20.50; Old Steel Rails, $15 @ $16; No. 1 Railroad Scrap, $16 @ $16.50, Philadelphia, or for deliveries at mills in the interior, $16 @ $17, according to distance and quality; $8 @ $9 for No. 2 Light; $11 @ $12 for Machinery Scrap; $11.75 @ $12.25 for Wrought Turnings; $8 for Cast Borings, and nominally $22 for Old Fish Plates, and $13 @ $14 for Old Car Wheels.

Cleveland.

CLEVELAND, OHIO, February 20, 1893.

The Ore situation still refuses to develop into sales of new material, although it is apparent that the beginning of business is being hastened by the improvement in the Pig Iron market. Bessemer Iron is still steadily improving, and if it continues to do so only the dispute over vessel rates can much longer delay active business in the way of disposing of Ore to be mined in 1893. The local organ of the vessel men says editorially this week: "The capacity of new freight vessels added to the lake fleet in 1892 was 90,576 gross tons, and the capacity of vessels now under contract, all to be completed by June 1 next at the latest, is 87,670 gross tons, or a total of 178,246 gross tons for the two years. The capacity of freight tonnage lost during the season of 1892 was 28,708 gross tons. These figures are given by request. This new tonnage will, of course, have some bearing upon the question of freights."

The vesselmen make the strong point that all this extra tonnage has been called into demand by the great quantities of coal and grain to be shipped and that men of means consider it good property from a money making standpoint. The average Ore rates for 20 years have been: Escanaba—Contract rate, $1.25; "wild" rate, $1.17. Marquette—Contract rate, $1.62; "wild" rate, $1.53. Average for 10 years: Escanaba—Contract rate, $1.01; "wild" rate, $1.03. Marquette—Contract rate, $1.20; "wild" rate, $1.24. Averages from Ashland for 8 years: Contract rate, $1.30; "wild" rate, $1.43. Last year the averages were: Escanaba—Contract rate, $1; "wild" rate, 74¢. Marquette—Contract rate, $1.15; "wild" rate, 98¢. Ashland—Contract rate, $1.25, "wild" rate, $1.15.

Their present estimates of this season's rates are about 25¢ or 30¢ ℔ ton above the figures at which the Iron men believe the rates should and will be fixed. The gradual improvement in the Pig Iron market is hastening the beginning of new business, but for the present little can be done. Buyers can scarcely hope to secure Ore at the anticipated 75¢ ℔ ton reduction if freight rates are to be rigidly fixed at the vesselmen's figures. Many Ore men believe that something tangible will be developed this week, and that sales will be recorded early in March. Buyers, sellers and vesselmen are anxious to begin business, but are so far apart in their ideas that it may require two or three weeks of negotiations to put business on a smooth plane.

Iron Ore.—The call from the furnaces was for about 30,000 tons last week, and more would have been sent had the necessary cars been provided. There is said to be a very fair demand for the non-Bessemers on the docks at Cleveland, Fairport and Ashtabula, and the stocks of unsold Ores are being rapidly reduced. Of the Bessemers still on the docks the quantity is not large. Still the Ore must rank close to 64 % in Iron to bring $4 ℔ ton. Only a few sales are reported for the past week, and these were principally confined to non-Bessemers at $3 ℔ ton.

Pig Iron.—The market continues to brighten up and dealers are much more

cheerful. Quotations for Bessemer are still announced at $13.65 @ $13.80, but it is said that there has been an actual advance in selling prices over the former week's record. Gray Forge at $12.40 @ $12.50 is also picking up and Foundry Irons seem in more favor. Some demand for Lake Superior Charcoal is reported and some advances are probable.

Manufactured Iron.—The demand is excellent and a fair amount of Common Bars are moving at 1.55¢ @ 1.60¢.

Old Rails.—Little business is reported even at $19 @ $19.50 for Old American. Old Wheels are a bit firmer, and are quoted at $14 @ $14.25 ℔ ton.

Muck Bar.—There is a very fair demand for Muck at $24.50 @ $24.75, and considerable business is being done.

Scrap.—Business is a little better and seems to have set in the right direction. Dealers quote No. 1 Railroad Wrought at $15 @ $15 50 ℔ net ton; Cast-Iron Borings at $7.30 ℔ gross ton and Wrought-Iron Turnings at $10 @ $10.25 ℔ gross ton.

Freights.—Ore: Cleveland to Valley Points, 62½¢; Cleveland to Pittsburgh, $1.05. Pig Iron: Valley Points to Cleveland, 60¢ ℔ ton; to Pittsburgh, 60¢, Muck Bar, Blooms, Billets, Scrap, Iron and Steel Rails, Old Wheels, &c.: Valley Points to Cleveland, 70¢ ℔ ton; to Pittsburgh, 75¢ ℔ ton; to Boston, $3.50 ℔ ton; to New York, $3.10 ℔ ton; to Philadelphia, $2.70 ℔ ton.

Baltimore.

BALTIMORE, February 20, 1893.

The past week has been one of increased demand, especially in Bar Iron, but the competition has caused prices on the material mentioned to drop $1 ℔ ton. Whether the trade here would stand an advance, however slight, is problematical, even with the increased demand, and no one seems to have the necessary stamina to make the first advance. The cutting in prices cannot be blamed on the local dealers, but on Philadelphia parties, who habitually flood this market with prices which residents are compelled to meet. Machinery Steel remains fairly active, and a slight advance is noted.

Bars.—As stated above, prices have dropped $1 ℔ ton and we therefore quote from stock 1.85¢ to 2¢; from mill 1.80¢. Several good carload orders have been placed here during the last week and the above prices were likely shaded somewhat for same.

Plates.—No inquiries and no sales of any consequence in this line during the week, and prices remain as before: Tank Iron and Steel, 1.85¢ @ 1.95¢; Shell Steel, 2.20¢ @ 2.25¢; Flange Steel, 2.40¢ @ 2.45¢; Fire Box Steel, 2.55¢ @ 2.60¢; Marine Steel, 2.55¢ @ 2.60¢.

Merchant Steel.—The increased demand in this line enables us to quote a slight advance on Machinery and Tire Steel. This advance applies to stock orders rather than to mill orders, but it is hoped that it will become general. Machinery Steel, 2.17½¢ @ 2.30¢; Tire Steel, 2.20¢ @ 2.30¢; Toe Calk, 2.35¢ @ 2.45¢; Spring Steel, 2.50¢ @ 2.60¢.

Light Sheets.—Orders from stock have been fair, but few or no mill orders of consequence are reported, and prices remain as last quoted.

Tubes and Pipe.—Little is doing in this line and discounts are: 3 inch, 65 %; 2-inch, 60 %, from stock, with an additional 5 % for mill orders.

Robert B. Womble, late of Addison, Clark & Bro., has opened a warehouse at 116 Light street, where he will carry a stock of Iron and Steel.

Metal Market.

Copper.—The market has remained quiet, and there is no sign of change in any particular. Small spot lots offered at prices as low as any that have been quoted thus far this month seem to virtually go a begging, and the presumption is that if consumers are as busy as they are represented to be, and using up large quantities of Ingot, they must either have a good stock of material on hand or be quietly supplied by some private arrangement with leading producers. In any event, it is a fact that local offerings at 12.05¢ @ 12.10¢ for Lake Ingot, for prompt and near future delivery, fail to attract orders. Bids of 12¢ have been made for very fair quantities, but little, if any, Copper has been sold at that price in this market latterly. Casting brands are still quoted at 11¼¢ in ordinary jobbing quantities, but carloads are offered at 11.20¢, and it was intimated that bids of 11⅛¢ for large blocks would not be overlooked.

Pig Tin.—The situation is wholly unchanged. Values have fluctuated within very narrow bounds, speculation has been confined almost wholly to a limited circle and the movement of Tin into the channels of consumption has proceeded in about regulation manner. Apparently the tendency is to keep an even keel until some word comes from Washington as to the probability of an extra session of Congress, and if one is called, receipt of information as to what may be done in the direction of repealing the duty prescribed in the McKinley Tariff act. At the close speculation was livelier, at somewhat higher prices. Fully 350 tons changed hands on the Metal Exchange, including 25 tons, February delivery, at 20.15¢; 100 tons March, 100 tons April and 100 tons May delivery, at the uniform price, 20⅛¢; 25 tons March alone at 20.17½¢.

Pig Lead.—There has been only a moderate business and the status of the market is practically the same as it was a week ago, with buyers and sellers evidently inclined to follow a conservative policy for the time being. Sales have been made of a few hundred tons at from 3.95¢ for round lots up to 4¢ for single carloads.

Spelter.—No change for the better is visible in the market for Western brands. Small parcels would probably bring 4.30¢ @ 4 35¢, on the spot, but round lots have been placed at 4¼¢ @ 4.27½¢ for April and later shipments. There were some sellers at the latter price at the close of the week under review.

Antimony.—The market has remained quiet and unchanged. Current quotations are 10¢ @ 10¼¢ for Hallett's, 10¼¢ @ 10½¢ for LX and 10¾¢ for Cookson's.

Tin Plate.—Fairly large sales have been made of 100-lb and lighter Bessemer, Coke finish Plates for May and more distant future shipment. The prices, it is understood, were very close to those quoted for spot stock. Otherwise business has continued quiet and hardly any change in values has taken place. Spot prices are as follows: Coke Tins—Penlan grade, IC, 14 x 20, scarce; J. B. grade, do., scarce; Bessemer full weight, scarce; light weights, $5.10 for 100 lb, $4.95 @ $5.00 for 95-lb, $4.80 @ $4.85 for 90-lb. Siemens Steel scarce. Stamping Plates—Bessemer Steel, Coke finish, IC basis, $5.60 @ $5.65; Siemens Steel, IC basis, $5.75; IX basis, $6.85. Charcoals—Melyn grade, IC, scarce; Crosses, $8; Allaway grade, IC, $5.70; Crosses, $7; Grange grade, IC, $5.85; Crosses, $7.10. Charcoal Ternes—Worcester, 14 x 20, $5.70; do., 20 x 28, $11.35; M. F., 14 x 20, $7.50; do., 20 x 28, $15; Dean grade, 14 x 20, $5.30 @ $5.37½; do., 20 x 28, $10.50 @ $10.70; D. R. D. grade, 14 x 20, $5.25; do., 20 x 28, $10.45; Dyffryn, 14 x 20, $5.50; do., 20 x 28, scarce. Wasters—S. T. P. grade, 14 x 20, $5; do., 20 x 28 $9.75; Abercarne grade, 14 x 20, $4.95; do., 20 x 28, $9.62½.

Financial.

Outside of speculative circles the markets are undisturbed. Business is in good volume, and, irrespective of currency questions, general conditions are favorable to an active spring trade. In Wall street uneasiness is felt on account of the low stock of gold in the Government Treasury, and many express disappointment that Secretary Foster should hesitate to issue gold bonds as a measure of temporary relief. The Senate on Saturday evening passed an amendment to the Sundry Civil bill authorizing the Treasury to issue five-year 3 % bonds. Pending further action gold shipments are undiminished, and it does not yet appear that local bankers are disposed to co-operate on the line recently marked out in tiding over any temporary difficulty. It also remains to be seen whether the House will pass Mr. Sherman's amendment, or whether the authority intended to be conferred will be exercised either by the present Treasurer or his successor. Again, from what source are additional supplies of gold to be derived? And why should gold be borrowed for the purchase of silver rather than suspend the monthly purchases? Certain it is that, whatever the cause, the drain of gold continues and that the issues of paper therefor, virtually redeemable in gold, only aggravate the difficulty.

The subject next in importance bearing upon questions of finance is the supposed collapse of the Reading "combine," resulting in enormous sales of Reading stock, equal to something like one-half of the entire transactions on the Stock Exchange during the week. The trouble is supposed to have originated in the lease of the Lehigh Valley and New Jersey railroads a year ago, with the object of controlling the trade in coal. In consequence of this expansion the Reading management, as reported, was compelled to resort to a loan for the payment of its annual interest, hypothecating valuable assets for this purpose. With its credit badly strained in this operation, the company reached out to secure the Boston & Maine Railroad, and next, to perfect its Eastern connections, sought to get the New York & New England, but in this plan was thwarted by the New York, New Haven & Hartford corporation. So, vaulting ambition o'erleaped itself, and in this predicament application was made for a receiver. One prediction is that Drexel, Morgan & Co. and their friends will supplant the McLeod *régime* and bring Reading into harmonious relations with the Vanderbilt Pennsylvania interests. The receivers are: A. A. McLeod, president of the company; Elisha P. Wilbur of the Lehigh Valley division of the Reading, and Edward M. Paxson, Chief Justice of the Supreme Court of Pennsylvania.

On the Stock Exchange the industrial class were badly slaughtered. Reading, however, above all others, was the conspicuous feature, and trading in the various bond issues was on an enormous scale at a range of prices rarely exceeded. Nevertheless, for first-class bonds there was a good inquiry on foreign account. New England was largely sold in the liquidation of loans. On Monday the Reading general mortgage bonds fell to 77¼. The first preference incomes showed a net loss of 4¼ %. The second incomes ended at 39½. The lowest price of the thirds was 28, and after rallying 2½ % the last quotation showed a net decline of 7½ %. The deferred incomes sold at 8½ and ended down 1½ % at 9. The unsettled feeling

was intensified by news of the engagement of $3,500,000 gold for shipment to Europe.

United States bonds were quoted as follows:

U. S. 4½s, 1891, extended	99⅛
U. S. 4s, 1907, registered	112
U. S. 4s, 1907, coupon	112
U. S. currency 6s	107½

The weekly statement of the New York city banks shows a decrease in reserve of $3,634,675. The banks now hold $13,605,900 above the legal requirement, as against $30,857,550 at this date a year ago. Loans were contracted nearly $2,000,000. The money market was decidedly firmer, influenced by the shrinkage of collateral and calling in of loans. Time loans were in good demand. Rates are higher: For 30 days, 4 %; 60 days to four months, 4½ @ 5 %; five months and longer terms, 5 @ 6 %. Commercial paper is in poor demand and rates are steady. The total bank clearings of all the clearing houses of the United States for the week were $1,251,706,837, against $1,231,524,173 last week and $1,331,275,666 the corresponding week last year.

Ellis H. Roberts, Assistant Treasurer of the United States, has been elected president of the new Franklin National Bank.

Exports of specie for the week were $3,000,000, and gold exports since January 1 are $20,817,000, against about $6,000,000 for the same time in 1892.

Prices of commodities have not materially changed. Wheat is about 2½¢ lower on lower cables. Corn, cotton, &c., are about the same. Dry goods jobbers report that numerous retailers have arrived.

The exports from the United States during January were less than in any year since 1888, reaching only $67,666,693, against exports in January, 1892, of $100,138,336. The total exports for seven months have been less than in any year since 1889, being $526,928,400 for the seven months ending January 31, 1893, against $651,263,531 for the seven months ending January 31, 1892. The total imports for seven months ending January 31 have been $528,245,884 for 1893, against $458,394,771 for 1892.

Coal Market.

The Coal trade is not disturbed by the sudden rupture and collapse of the Reading "combine" under the ambitious management of President McLeod. One of the Coal company presidents remarks that a natural effect will be to deaden trade for the moment, as consumers will be on the lookout for a drop in prices, especially as the spring season is approaching, when a drop is expected from natural causes. At present there is a plenty of Coal, the small Steam sizes being in better supply. The best grades of the latter may be quoted: Pea, $3, alongside; Buckwheat, $2.20, alongside. The common understanding of the situation is this: That the inevitable has happened to the "combine" launched one year ago with much trumpeting; only the dissolution now chronicled occurs sooner than was anticipated. The scheme to absorb all New England via the Poughkeepsie Bridge was impracticable. Thereupon, reaching out for one railroad after another, with credit already strained to the utmost, invited a catastrophe. But radical changes in the Coal business are not looked for, as Mr. Wilbur of the Lehigh, who is associated with Mr. McLeod in the receivership, also Mr. Paxton, are recognized as conservative, but operations will be conducted on a comparatively limited scale.

Shipments of Anthracite Coal for month of January, 1893, compared with the corresponding period last year:

Wyoming region	1,875,094	Inc. 354,166
Lehigh region	407,794	Inc. 11,402
Schuylkill region	786,690	Dec. 147,476
Total	3,069,579	Inc. 218,092

The stock of Coal on hand at tidewater shipping points January 31, 1893, was 532,375 tons; on December 31, 1892, 657,868 tons; decrease, 125,493 tons.

The first shipment of Coal by the Lytle Coal Company from their new colliery at Primrose, near Minersville, has been made, and when fully in operation the colliery will be one of the largest producers of the region.

Bituminous Coal is unchanged. A contract has been made for the delivery at London, England, of 40,000 tons of Cannel Coal from the Jellico district, Southern Kentucky. It will be shipped via the Chesapeake & Ohio from Norfolk.

The Dominion Coal Company, Limited, who have secured control of the Cape Breton Coal mines for the next 100 years, have organized with the following officers: President, Henry M. Whitney, Boston; treasurer, John S. McLennon, Montreal; secretary, B. F. Pearson, Halifax, N. S.; chief engineer and general manager, F. S. Pearson, Boston; resident manager in Nova Scotia, David McKeen, Cape Breton.

New York.

Office of *The Iron Age*, 96-102 Reade street, NEW YORK, February 21, 1893.

Pig Iron.—The Thomas Iron Company are booking orders from their old customers for delivery during the balance of the year at last year's prices, although the figures for the current year have not been officially announced. Generally speaking, the trade is quiet, with a somewhat easier market. We quote Northern brands at $14.75 @ $15.25 for No. 1; $14 @ $14.50 for No. 2; $13 @ $13.50 for Gray Forge, tidewater. Southern Iron, same delivery, $14 75 @ $15 for No. 1; $13.75 @ $14 for No. 2 and No. 1 Soft; $13.25 @ $13.50 for No. 2 Soft; $12.75 @ $13 for Gray Forge.

Spiegeleisen and Ferromanganese.—Ferromanganese continues quiet, with quotations at $56 @ $56.50, tidewater. Nothing has been done in Spiegeleisen, which, however, is now being offered at $25.25 @ $25 50.

Billets and Rods.—The market has been particularly quiet, both in foreign and in domestic material. We quote Steel Billets, tidewater, $24.50 @ $24.75; foreign, $29 @ $29.50; Wire Rods, $32.25 @ $32.75; foreign Wire Rods, $40 @ $40.50, and Swedish Rods, $54.50 @ $56.

Steel Rails.—The only transaction referred to by any Eastern mills is the sale of about 3000 tons to a Southern road at private terms. At the present time there is very little business in sight, and it is not likely that any marked activity will prevail. Prices continue $29, tidewater, by Eastern mills. From the West come reports that considerably more business has been placed than is generally known, and that as a matter of fact the works have larger orders on hand now than they had at the corresponding period last year.

Manufactured Iron and Steel.—The only contract of consequence placed during the current week has been for the Structural Material for the Broadway Improvement Company of this city. The Manhattan Life Building has not yet been placed, but it is expected to be closed at an early date. There has been quite a fair run of moderate sized orders and there is a good deal of inquiry and figuring for future shipments. Nothing of consequence has transpired in the Plate or in the Bar market, which continues very low. We quote: Beams up to 15 inch, 2.05¢ @ 2.15¢; 20-inch, 2.35¢ @ 2.40¢ for round lots; Angles, 1.85¢ @ 2¢; Sheared Plates, 1.85¢ @ 2.10¢; Tees, 2.10¢ @ 2.30¢; Channels, 2.10¢ @ 2.20¢, on dock. Car Truck Channels, 2¢ @ 2.10¢. Steel Plates are 1.85¢ @ 2¢ for Tank; 2.10¢ @ 2.25¢ for Shell; 2.40¢ @ 2.50¢ for Flange; 2.5¢ @ 2.75¢ for Marine, and 2.60¢ @ 2.80¢ for Fire Box, on dock. Refined Bars are 1.65¢ @ 1.9¢, on dock; Common, 1.55¢ @ 1.60¢. Scrap Axles are quotable at 1.90¢ @ 2.10¢, delivered. Steel Axles, 1.85¢ @ 2¢, and Links and Pins, 1.85¢ @ 2.10¢; Steel Hoops, 1.80¢ @ 1.90¢, delivered.

Track Material.—A number of fair orders have been placed during the week at the following range of prices: Spikes, 1.90¢ @ 1.95¢; Fish Plates, 1.55¢ @ 1.60¢; Track Bolts, square nuts, 2.40¢ @ 2.45¢, and hexagon nuts, 2.55¢ @ 2.60¢, delivered.

Old Material.—Among the recent sales in this line, which has been exceedingly dull, were 100 tons of Old Steel Rails at a price equivalent to $13, Jersey City, and 500 tons of Old Iron Rails equivalent to $16.50, on cars Jersey City.

Freights.—Rates to New York are:

Pig Iron.	Per ton.
Birmingham district	$4.01
Lehigh Valley	.60
Pittsburgh	1.90
Manufactured Iron and Steel.	Per 100 lb.
Lehigh Valley	9¢
Pittsburgh	18¢
Billets.	Per ton.
Harrisburg district	$1.35
Pittsburgh district	2.30

The German Iron Trade.

(*One mark per metric ton is equivalent to 24.8 cents per gross ton.*)

DUSSELDORF, February 4, 1893.

The Coal market has strengthened in consequence of the fact that the syndicate will probably be formed. Nothing definite, however, will be known until the meeting takes place on the 16th. The total sales of the Dortmund district in 1892 were 4,560,984 tons of Coke, against 4,388,010 tons of Coke in 1891.

The Iron trade remains very dull, although the feeling is slightly stronger, because it is expected that the Coal syndicate will have a favorable influence upon the Iron industry. The assumption is that the placing of the usual spring contracts will put some life into the Iron market. Pig Iron remains very dull and prices are maintained with difficulty, because offerings increase in quantity. The rolling mills report a dull business, but note that spring contracts are beginning to appear. In Blooms and Billets the most urgent part of the demand is now covered.

Steel Slabs, which were offered from the Saar District a short time since at prices so low that they netted only 69 marks at mill, have risen by 10 marks.

The Kraemer Steel Works, at St. Ingbert, have begun the building of a new Basic Steel plant and heavy rolling mill train, which it is expected will be completed toward the end of 1894.

The Spanish Government has ordered 70,000 Mauser rifles and 5000 carbines, with 18,000,000 shells. Beside this there was ordered the arrangement for the arsenals which the Spanish Government proposes to build at Oviedo and at Toledo, the total order amounting to 12,000,000 pesetas.

The German imports during the year 1892 were as follows, compared with 1891:

	1892. Metric tons.	1891. Metric tons.
Pig Iron	209,306	244,852
Sheets	2,631	2,711
Tin Plate	1,234	1,198
Wire	4,378	5,287

As announced, the Stokes & Parrish Machine Company sold some property to Bement, Miles & Co., but the Stokes & Parrish Elevator Company will retain

their West Philadelphia factory at Thirtieth and Chestnut streets, where they continue the manufacturing of elevators and hoisting machinery.

Chicago.

(By Telegraph.)

Office of *The Iron Age*, 59 Dearborn street, CHICAGO, February 21, 1893.

The recurrence of severe winter weather the past week has caused another congested period in the operations of railroads, and merchants report more trouble than ever before with the prompt transmission or receipt of freight. This difficulty is becoming more serious, especially as the best-managed and best-equipped roads appear to be unable to improve the situation. There is a scarcity of both cars and motive power, which is becoming more pronounced every week.

Pig Iron.—An excellent business is reported for the past week in local Coke. The volume was, perhaps, not so large as that of the previous week, but was deemed quite satisfactory by the furnace companies. Negotiations are pending for additional quantities, so that the end of the season of activity is not yet visible. A retrospect of the trade of the past two months is rather encouraging to the makers. They started in January with a weak market, which looked as if there would be a very considerable decline in order to meet the views of buyers. The large transactions which have since taken place on a much better basis than feared have checked the tendency to very low prices, and it now looks as if there would be no further decline, unless very unfavorable conditions should arise. Sales of Southern Coke are reported of larger size than for some time. These sales were effected by concessions on the part of small Southern companies having an accumulation of Soft Iron which they were anxious to move. The transactions are believed by the sellers themselves to be exceptional, and not to fully represent the market. The prices made were but little above the level of those of last September. Lake Superior Charcoal has been considerably less active than Coke Iron, but consumers are known to be in early need of renewing old contracts, and considerable business is therefore expected in the near future. Makers of this class of Iron are feeling increased confidence in the prospects for this year, and some of the most discouraged among them are now making predictions of higher prices, which are rather sweeping in view of the general condition of trade. Quotations are as follows, cash, f.o.b. Chicago:

Lake Superior Charcoal	$16.50 @ $17.00
Local Coke Foundry, No. 1	13.25 @ 13.75
Local Coke Foundry, No. 2	12.75 @ 13.25
Local Coke Foundry, No. 3	12.50 @ 12.75
Local Scotch	14.00 @ 14.50
Ohio Strong Softeners	16.25 @ 17.00
Southern Coke, No. 1	13.35 @ 13.60
Southern Coke, No. 2	12.85 @ 13.10
Southern, No. 1, Soft	13.35 @ 13.60
Southern, No. 2, Soft	12.85 @ 13.10
Southern Gray Forge	12.60 @ 12.90
Southern Mottled	12.50 @ 12.75
Tennessee Charcoal, No. 1	16.50 @ 17.50
Alabama Car Wheel	18.35 @ 19.85
Coke Bessemer	14.00 @ 14.50
Hocking Valley, No. 1	17.00 @ 17.50
Jackson County Silvery	17.00 @ 17.50

Bars.—The market is steadily getting into better shape. The quotation of 1.55¢, half extras, Chicago, on Common Iron is regarded as a close price. Mills that have been standing out for 1.60¢ seem to be in a fair way to realize their figures soon. The bulk of business now going is reported to be on the basis of 1.57½¢. Good inquiries are being received from all classes of consumers as well as merchants, and the future looks more hopeful. Soft Steel Bars are unchanged at 1.65¢, Chicago, up for shipment from mill, with an increased movement reported among those who have hitherto been exclusive consumers of Bar Iron. Store prices are 1.70¢ @ 1.80¢ for Bar Iron and 1.80¢ @ 1.90¢ for Soft Steel.

Structural Material.—Large contracts for Beams which were expected to be placed by this time have been postponed for some cause, and consequently trade is dull in the building line at present. The severe weather has interfered with smaller operations and thus restricted consumption. Inquiries for outside cities are fair, and as soon as the weather moderates a good demand is expected from such localities. Chicago building operations, however, are now expected to be less active than last year, as so many enterprises will be deferred until fall, after the exposition is over. Bridge work is fairly brisk and small lots of material for this purpose have been in somewhat better demand recently. Mill orders, Chicago delivery, continue to be quoted as follows: Beams, 2¢ @ 2 10¢; Angles and Universal Plates, 1.85¢ @ 1.95¢.

Plates.—There is little to be said under this head. Some moderate quantities have been sold for mill shipment, but no large contracts came upon the market. Store trade is still quite dull. Quotations on mill shipment, Chicago delivery, are as follows, for carload lots: Tank Steel, 1.90¢ @ 2¢; Sheet Steel, 2.10¢ @ 2.15¢; Flange Steel, 2.27¢ @ 2.30¢; Ordinary Fire Box, 3.50¢. Store prices continue as follows: Nos. 10 to 14 Iron or Steel Sheets, 2.35¢ @ 2.60¢; Tank Steel, 2.25¢ @ 2.40¢; Shell, 2 40¢ @ 2.60¢; Flange Steel, 2.70¢ @ 2.90¢. Tubes are quoted at 60 % off, with concessions on desirable orders.

Sheets.—Black Sheets maintain quotations for mill shipment at 2.85¢, Chicago, for No. 27 Common, and 2.95¢ @ 3¢ for Steel, with light transactions. Galvanized Iron is moving somewhat spasmodically, being occasionally active and then extremely dull. Quotations are unchanged at 70 and 10 % off for Juniata, mill shipment, and 70 and 2½ % from stock. Sheet Copper is steady at 30 % discount for small lots.

Merchant Steel.—This branch of business is quite steady, notwithstanding rumors of low offerings by mills not of the highest standing. These latter report that they have no difficulty in maintaining prices at 2¢ @ 2.20¢, Chicago, for Machinery and Spring Steel, for such quantities as are now needed to piece out the season. Tool Steel continues to be quoted at 6¢ @ 7¢, according to quantity.

Rails and Track Supplies.—The Rail situation is regarded here as much more satisfactory than it was at the same time last year. Orders booked now are well distributed among the mills both East and West and there is no apprehension of a decline in prices. Further than this, numerous projects for new roads are springing up, which are usually of small extent, but in the aggregate foot up to a very respectable showing. Great promise is held out of a considerable number of these new projects being undertaken unless financial troubles arise to interfere with the negotiations of their bonds. Prices are firmly held at $30 @ $32, according to quantity. Splice Bars are in excellent demand, but with brisk competition among manufacturers for the orders in sight. Quotations are still made on a basis of 1.65¢ @ 1.70¢ for Iron or Steel, but considerable depends on the character of the order. Track Bolts with Hexagon Nuts are unchanged at 2.60¢ @ 2.65¢; Spikes, 2¢ @ 2.05¢.

Old Rails and Car Wheels.—More activity is reported in old Iron Rails than for several weeks and at better prices. Sales have been made at $19, Chicago, under special circumstances, but nevertheless the price is one which a few weeks ago would have been regarded as ridiculously high under any circumstances. Other sales have been made to outside parties on a basis of $18.50, Chicago. The price may therefore be said to be established at $18.50 @ $19, depending on the position of the buyer or seller. Old Steel Rails are quiet at $11.50 for short pieces and $14.50 @ $15 for long lengths. Large transactions have taken place in Car Wheels, which are quoted by dealers at $14.50 @ $14.75.

Scrap.—The market looks weaker, as there are now large offerings from tired holders. Consumers are taking advantage of the situation to force prices lower. The consequence is that business has not been so active the past week and may not be until a more settled basis is reached. Dealers quote as follows per net ton: No. 1 Forge, $15.25; No. 1 Mill, $11; Sheet Iron, $6; Pipes and Flues, $10; Axles, $20; Horseshoes, $15.50; Fish Plates, $17; Spikes and Bolts, $15; Cast Borings, $6; Wrought Turnings, $8.25; Axle Turnings, $10 50; Heavy Cast, $11.25; Stove Plate, $8.50 @ $9; Malleable Cast $10; Mixed Steel, $10 @ $10.50, gross ton; Leaf Steel, $17.75.

Metals.—Lake Copper is weaker and is now quoted 12¼¢ in carload lots. Casting brands are unchanged at 11¾¢. Spelter is dull, with 4.10¢ asked for carload lots. The Pig Lead market here showed some strength at the opening and sales were made at 3.77½¢ @ 3.80¢, but afterward under free offerings the market declined to 3¾¢, with few buyers.

Freight Rates.—Freight rates to Chicago on carload lots of Iron and Steel from principal outside sources of supply:

Pig Iron.

	Ton.
Birmingham, Ala	$3.85
Chattanooga, Tenn	3 60
South Pittsburg	3.47
Cowan	3.23
Ashland, Wis	2.75
Mahoning Valley, Ohio	2.00
Southern Ohio	2.00
Western Wisconsin	1.50
Central Wisconsin	1.15

Finished Iron and Steel, Nails, Barb Wire, &c.

	100 pounds.
Eastern Pennsylvania	$0.28
Superior, Wis	.22
Pittsburgh, Pa	.17½
Ohio River points	.17½
Youngstown, Ohio	.15
Cleveland, Ohio	.14
Canal Dover, Ohio	.14
Toledo and Findlay, Ohio	.12
Muskegon, Mich	.11
Muncie, Ind	.11
Peoria, Ill	.08
Springfield, Ill	.05

Cincinnati.

(By Telegraph.)

Office of *The Iron Age*, Fifth and Main Sts., CINCINNATI, February 21, 1893.

There is nothing new to report of the Pig Iron market, there being a light volume of business, and the existing demand is fully supplied at quotations of a week ago. The current consumptive orders have been even smaller than the preceding week, and as there is no large buying for forward delivery the aspect is anything but encouraging, though prices seem to be down to rock bottom, and there appears to be no disposition on the part of the furnaces to stimulate trade by offering to make further concesions. Doubtless the new departure recently made by the Northern furnaces to meet all competition has turned much consumption into new channels, but there are evidences that consumption is large for nearly every purpose,

and if the demand is comparatively light for forward delivery it must be made up by increased buying for current consumption before long. Quotations are unchanged, as follows:

Foundry.

Southern Coke, No. 1	$13.25 @ $13.50
Southern Coke, No. 2	12.00 @ 12.25
Southern Coke, No. 3	11.50 @ 11.75
Ohio Soft Stone Coal, No. 1	16.00 @ 16.25
Ohio Soft Stone Coal, No. 2	15.00 @ 15.25
Mahoning and Shenango Valley	15.25 @ 16.25
Hanging Rock Charcoal, No. 1	19.00 @ 19.25
Hanging Rock Charcoal, No. 2	18.00 @ 18.50
Tennessee and Alabama Charcoal, No. 1	15.50 @ 15.75
Tennessee and Alabama Charcoal, No. 2	14.50 @ 14.75

Forge.

Gray Forge	11.00 @ 11.25
Mottled Neutral Coke	10.75 @ 11.00

Car Wheel and Malleable Irons.

Standard Southern Car Wheel	18.00 @ 19.00
Lake Superior Car Wheel and Malleable	17.75 @ 18.00

St. Louis.

(*By Telegraph.*)

Office of *The Iron Age*, Bank of Commerce Building, St. Louis, February 21, 1893.

Pig Iron.—The market fails to show any improvement, either as regards prices or volume of business, although in the absence of transactions of any magnitude prices are not quotably lower. Consumers do not appear at all interested in the market, and seem to think that by adopting a waiting policy they will be able to purchase at lower prices than at present prevailing. Those who have done this during the past three months are gainers thereby, and from the general condition of the market at present a continuance of this policy seems justifiable. Sales during the past week were not large, and prices made were close, No. 2 Foundry being most in demand. Gray Forge is neglected to a certain extent, and various prices are quoted. From $8.25 to $8.75, f.o.b. cars Birmingham, is the range of quotations. The stronger Southern furnaces are asking the last named figure, which they are willing to shade somewhat. On the other hand, furnaces which, perhaps, have more Iron on hand than they want, or are in need of money, are asking $8 25. This is the situation, and it is superfluous to add that it is daily growing weaker—not much, it is true, but still sufficient to cause a general feeling of distrust as to the future. We quote as follows for cash, f.o.b. cars St. Louis:

Southern Coke, No. 1 Foundry,	$14.00 @ $14.50
Southern Coke, No. 2 Foundry,	12.75 @ 13.00
Southern Coke, No. 3 Foundry,	12.25 @ 12.50
Southern Gray Forge	11.75 @ 12.00
Southern Car Wheel	18.00 @ 18.50
Lake Superior Car Wheel	17.50 @ 18.00
Ohio Softeners	16.25 @ 17.00
Missouri Charcoal, No. 1 Foundry	14.00 @ 14.50

Bar Iron.—Mills report an increasing demand, and state the outlook shows a decided improvement. Jobbers have been large buyers, and the railroads have also been purchasing freely. Car works are running full and are constantly in the market for supplies. The spring trade promises to be large, and jobbers are making preparations to meet it. Prices are unchanged, as follows: Mills quote 1.60¢, f.o.b. cars East St. Louis, half extras. Jobbers ask 1.70¢ @ 1.75¢, according to quantity.

Barb Wire.—This market is in a peculiar position. Mills report an exceedingly heavy trade and some are unable to accept orders for anything like prompt shipment. In the face of this heavy demand prices are not strong. Mills quote Painted at $2.20 for carload quantities, which price is hard to get. Galvanized is quoted at 40¢ advance above Painted. Jobbers are kept fairly busy and state the outlook for a large spring trade is encouraging.

Wire Nails.—Some improvement is noted in Wire Nails, although the trade are not rushing in to buy at the recent advance. Unfortunately for the market, this advance was made when the Nail trade is generally very dull and naturally curtailed buying somewhat. The demand is now improving somewhat, and, with a good spring trade, there is every indication of the advance being maintained. At the moment mills quote $1.65 for carload lots to jobbers. Jobbers report a good demand at from $1.75 to $1.80, according to quantity.

Pig Lead.—This metal has shown signs of weakness, which was occasioned to some extent by the weakness of the New York market. Sales were made at 3.70¢, and at this price the market cannot be called firm. At the close to-day the market is 3.65¢ @ 3.67½¢.

Spelter.—The downward tendency of Spelter continues, and there does not appear to be any bottom. It was thought that 4¢ would be the turning point, but sales have been made at 3.95¢ for delivery extending over the next two months. A report is current that 800 tons of American Spelter have been reshipped to this country, as the price now ruling in London is low enough to replace this shipment with Spelter from the Continent and still make a good profit by shipping this lot to New York.

Freight Rates.

Pig Iron.	Per ton.
Birmingham, Ala., to St. Louis	$3.25
Chattanooga, Tenn., to St. Louis	3.00
Sheffield, Ala., to St. Louis	2.80
Barb Wire and Wire Nails.	**Per cwt.**
Pittsburgh, Pa., to St. Louis	22¢
Cleveland, Ohio, to St. Louis	18¢
Anderson, Ohio, to St. Louis	14¢

David Roberts, vice-president of the Tennessee Coal, Iron & Railroad Company, spent several days in St. Louis recently, during which time he was the guest of E. A. Bayard, local manager for Matthew, Addy & Co. Mr. Roberts has been visiting the principal markets of the country to ascertain the general condition of trade and post himself regarding the outlook for spring business. He expressed himself as being well pleased with the business his company are doing in St. Louis and vicinity, and looks for a still larger trade during the present year.

Boston.

Office of *The Iron Age*, 146 Franklin St., Boston, February 21, 1893.

In Pig Iron there is a rather better trade. Prominent dealers note more orders, with at least a fair amount of business. Considerable heavy deliveries are going on, some of the foundry people being anxious to get their Iron along while freights are low. Dealers say that there are no changes in the condition of Iron at the furnaces. Southern Iron, delivered in Boston, is quoted at: No. 1, $15 50 @ $16; No. 2, $14.50 @ $16; No. 3, $14 @ $14.50. There are no new features in Pennsylvania Iron, so far as this market is concerned. Quotations for Iron at shipping port are: No. 1, $15 @ $15.50; No. 2, $14 @ $14.50; Gray Forge, $13.50. Spot lots on the market here would cost more by the addition of freight and other charges. Other Western Irons are quotable at $17.50 @ $19, delivered at Boston points, according to value.

Bar Iron.—The Bar Iron market is steady, and prices have been better sustained of late. Trade is good, in the way of orders, though the orders have not been heavy in volume of late. The market is steady at: Ordinary Bars from mill, 1.60¢ @ 1.70¢; from store, 1.70¢ @ 1.80¢. The best known Bars from Puddled Iron are quoted at 1.85¢ @ 1 95¢ from mill, and at 2.10¢ @ 2.25¢ from store. In Norway and Swedish Irons there are no changes in the market. Bars and Shapes are quoted at $66 @ $67.50 ℔ ton on the market here.

Steel and Steel Plates.—The demand for Steel is really good. The firmer position at Pittsburgh has attracted the attention of buyers, and they are giving more attention to orders. Still they do not move quite as fast as agents and brokers wish they might, because the principals at the Iron centers are urging the closing of contracts. If Steel should take another start upward there would be a heavy trade here in the way of orders. As it is, only small orders have been closed for the week. Dealers say that quotations are absolutely sustained at: Bessemer Steel, 2.15¢ @ 2¼¢; Machinery, 2.10¢ @ 2¼¢; Tire and Sleigh Shoe, 2¢ @ 2.10¢; American Cast, 7¢ @ 7½¢; English Cast, 13¢ @ 15¢; American Steel Rails, $29 at mill. The heavy orders of Steel Rails recently noted in the West have attracted the attention of New England buyers, and doubtless some business will soon follow, but since the contract for the Aroostook Railroad, mentioned in *The Iron Age* last week, no further contracts have been made public. Steel Plates continue quiet, with the market at: Tank, 1 95¢ @ 2¢; Shell, 2.10¢; Flange, 2.30¢ @ 2.35; Fire Box, 2.65¢ @ 3½¢.

Structural Iron.—The demand for Structural Iron continues good. There is not the least doubt but what one of the best building seasons Boston and New England has ever known is at hand. Architects say that the number of heavy Iron buildings to be put up is uncommonly good. They are making plans for one of the biggest structures Boston has ever known, the facts about which they will not yet divulge. Still there is little doubt but what it is the big building for the Architectural Club, already once or twice reported to have been abandoned. A number of small contracts for building Iron have lately been closed, amounting to good business, but no very large single contracts are mentioned. It is safe to say that 6000 or 8000 tons have been placed within a week. Quotations are fully sustained at: Beams and Channels, 2.10¢ @ 2 20¢ from mill and 2¼¢ @ 3¢ from store; Angles, 2¢ @ 2.12½¢ from mill and 2¼¢ @ 2½¢ from store; Tees, 2.40¢ @ 2½¢ from mill and 2½¢ @ 3½¢ from store.

Pipes and Tubes.—There is a good trade in Wrought Iron Pipe, with the card steadily maintained. Some waterworks contracts have lately been placed by Boston houses, but they are not very heavy ones, amounting to only two or three carloads each. Boiler Tubes are in good request, with the market steady.

Scrap.—Old Iron continues so dull as to be almost unsalable at any price. The trouble is the want of buyers. No. 1 Wrought Scrap is scarcely quotable at above 50¢ ℔ 100, delivered on the cars. Old Horseshoes and choice selections of No. 1 Scrap will bring 60¢, and possibly 70¢, for very even lots. Light Iron is quiet.

Bullard & Post, 125 Milk street, have accepted the agency for the New England States of the Central Expanded Metal Company of Pittsburgh.

The Citico Furnace at Chattanooga resumed operations last week after being idle for about a month. The officers of the company state that the demand for pig iron has improved but little and there has been no increase in prices.

British Iron and Metal Markets.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, TUESDAY, February 21, 1893.

Apart from a squeeze of the "shorts" in Scotch warrants, there has been no feature of interest in the Pig Iron Market during the past week. The manipulation has afforded some excitement, since private settlements were forced at as high as 55/ on Friday, while 51/ was paid in public on Monday, the latter being the highest price thus far where trades were made openly. Two lots were taken at that price. Meanwhile forward deliveries, offered at about 41/6, have been taken very sparingly. Cleveland warrants have remained at 35/, and Hematite at 45/7½, with very little business. Stocks in public stores include 345,000 tons Scotch and 41,000 tons Cleveland.

Pig Tin has been inactive. Certain holders realizing caused some weakness for a time, but purchases by leading operators subsequently, along with better American advices, changed the temper of the market. Outside interest is meager, and there is little disposition to venture.

Copper has been quiet during the greater portion of the week, but when price for Merchant Bar prompts dropped to £45. 2/6 the buying became rather more active. The agreement to limit production seems to be working well, but the American clique sell as freely as they can without depressing the market. India and home consumptive demand is rather quiet. The statistical position is somewhat adverse, owing chiefly to heavy Chili charters, about 2000 tons, during the first half of the month. Spot stocks increased 585 tons and the visible supply to the extent of 1592 tons. Sales of furnace material are very moderate, but deliveries on old contracts continue heavy.

Tin Plate is without new feature. Firmness of sellers hinders business. Makers generally are well booked. Several idle works will be reopened soon.

Scotch Pig Iron.—The market remains quiet and prices show very little change.

No. 1 Coltness,	f.o.b. Glasgow		55/
No. 1 Summerlee,	"	"	51/
No. 1 Gartsherrie,	"	"	51/
No. 1 Langloan,	"	"	54/
No. 1 Carnbroe,	"	"	46/
No. 1 Shotts	"	at Leith	52 6
No. 1 Glengarnock,	"	Ardrossan	49/6
No. 1 Dalmellington,	"	"	49/
No. 1 Eglinton,	"	"	46/

Steamer freights, Glasgow to New York, 1/; Liverpool to New York, 7/6.

Cleveland Pig.—Business slow and the market easy, with sellers at 34/9, f.o.b. shipping port, for No. 3 Middlesborough.

Bessemer Pig.—No improvement in demand; prices are rather weak at 46/6 for West Coast brands, Nos. 1, 2 and 3, f.o.b. shipping port.

Ferromanganese. — Prices without further change and the market slow. English 80 % quoted at £11. 5/, f.o.b. shipping port.

Steel Rails.—Demand continues moderate and the market barely steady. Heavy sections quoted at £4, f.o.b. shipping port.

Steel Slabs.—The market remains very quiet and prices still lean in buyers' favor. Bessemer quoted at £4, f.o.b. at shipping point.

Steel Billets.—Makers' prices as before but the market easy and slow. Bessemer, 2½ x 2½ inches, quoted at £4, f.o.b. shipping point.

Steel Blooms.—Very quiet market and prices unchanged. Makers quote £4 for 7 x 7, f.o.b. shipping point.

Old Iron Rails.—Slow business at former prices. Tees quoted at £2. 7/6 @ £2. 10/ and Double Heads at £2. 10/ @ £2. 12/6, f.o.b.

Scrap Iron. — Market fairly steady, but rather dull. Heavy Wrought Iron quoted at £2, f.o.b.

Crop Ends.—Market remains dull and unchanged. Bessemer quoted at £2. 7/6 @ £2. 10/, f.o.b.

Manufactured Iron. — No improvement in the demand and prices still rather weak. We quote, f.o.b. Liverpool:

	£	s.	d.		£	s.	d.
Staff. Ordinary Marked Bars	8	0	0	@	.....		
" Common "	6	5	0	@	6	7	6
Staff. Bl'k 'Sheet, singles....	7	7	6	@	7	10	0
Welsh Bars (f.o.b. Wales)....	5	7	6	@	5	10	0

Tin Plate.—Business fairly active and prices firm. We quote, f.o.b. Liverpool:

IC Charcoal, Alloway grade	13/6	@	14/0
IC Bessemer Steel, Coke finish	12/0	@	12/3
IC Siemens " "	12/3	@	12/6
IC Coke, B. V. grade 14 x 20	12/0	@	....
Charcoal Terne, Dean grade	13/6	@	14/

Pig Tin.—Market closed steady, but quiet. Straits quoted at £91. 15/ for spot and £92.5 for three months' futures.

Copper.—Barely steady market at the close. Merchant Bars quoted at £45. 2/6 @ £45. 5/, spot, and £45. 12/6 three months' futures. Best selected, £49.

Lead.—Market slow and still rather weak, with sellers at £9. 5/ for Soft Spanish.

Spelter.—Demand slow and the market weak at £16. 17/6 for ordinary Silesian.

Pittsburgh Freight Rates.

Between Pittsburgh and	Group 1. Per ton.	Group 2. Per ton.
Mahoning Valley, Shenango Valley & Wheeling, W. Va.	$0.60	$0.75
Steubenville, Ohio	.50	.65
McKeesport, Pa	.30	.30
Braddock, Pa	.30	.35
Dunbar, Pa	.60	.75
Kittanning, Pa	.50	.55
Johnstown, Pa	.75	.80

Rates shown under head of group 1 will apply on Pig Iron, Mill Cinder and Scale, per gross ton, in carloads of 12 gross tons and over.

Rates shown under head of group 2 will apply on Billets (Iron or Steel), Blooms (Iron or Steel), Borings (Iron or Steel), Chain Irons (in coils), Crop Ends (Iron or Steel), Ingots (Iron or Steel), Muck or Puddle Bars, Old Car Wheels and Axles, Old Rails, Scrap Iron, Scrap Steel, Scrap Tin, Slabs, unfinished (Iron or Steel), and Wire Rods (in coils), per gross ton, and on Ingot Molds and Cast Iron Pipe per net ton, in carloads of 12 tons, net or gross, and over.

From Pittsburgh, Beaver Falls, Homestead, Rankin, Braddock and McKeesport to	Group 1.	Group 2.
Albany, N. Y.	$2.20	$2.60
Baltimore, Md.	1.70	2.00
Boston, Mass.	2.70	3.00
Buffalo, N. Y.	1.25	1.25
Findlay, Ohio	1.75	1.75
New York City, N. Y.	2.30	2.60
Oswego, N. Y.	2.40	2.60
Philadelphia, Pa.	1.90	2.10
Rochester, N. Y.	1.80	2.00
Syracuse, N. Y.	2.00	2.10
Utica, N. Y.	2.30	2.60

Rates shown under head of Group 1 will apply on Pig Iron, Mill Cinder and Scale, per gross ton, in carloads of 12 gross tons and over.

Rates shown under head of Group 2 will apply on Billets (Iron or Steel), Blooms (Iron or Steel), Borings (Iron or Steel), Chain Iron (in coils), Crop Ends (Iron or Steel), Ingots (Iron or Steel), Muck or Puddle Bars, Old Car Wheels and Axles, Old Rails, Scrap Iron, Scrap Steel, Scrap Tin, Slabs, Unfinished (Iron or Steel), and Wire Rods (in coils), per gross ton, and on Ingot Molds per net ton, in carloads of 12 tons, net or gross, and over.

Freights.—The new rates on Pig Iron (1) and Billets, Blooms, Wire Rods and Old Material (2) which go into effect are:

To	1. Pig Iron.	2. Billets, &c.
Boston	$2.70	$3.00
New York	2.30	2.60
Philadelphia	1.90	2.20
Baltimore	1.70	2.00
Syracuse and Utica	2.30	2.60
Richmond, Va.	2.50	2.80
Saratoga	2.70	3.00
Binghamton	1.90	2.20
Hornellsville	1.80	2.00

New Publications.

ON THE LOADSTONE AND MAGNETIC BODIES AND ON THE GREAT MAGNET, THE EARTH. (De Magnete, &c.). William Gilbert of Colchester, Physician of London. A Translation by P. Fleury Mottelay. John Wiley & Sons, New York, pp. 368.

William Gilbert was born in the year 1540 in the town of Colchester, England. He went through what was then the martyrdom of the public grammar school, entered and was graduated at Cambridge, made the grand tour of the Continent, returned to England and settled in London, where he began practice as a physician. There is evidence that he cut loose at an early date from the wretched empiricism which then did duty as medical treatment, and, following the natural bent of his mind, experimented upon and proved the efficacy of many remedies. He conducted a medical school wherein he was the sole teacher, and which was the prototype of the Royal Society, and he continued this congenial work until he was appointed body physician to Queen Elizabeth. Why that extraordinary woman, who would take no medicine and whose savagely sarcastic remarks concerning physicians in general have passed into history, should have wanted in her last days an official medical attendant is something yet to be explained. The fact that she exempted Gilbert from that disappointment with which all of her personal retainers discovered that they were left out of her will goes somewhat to show that the Queen was perhaps more gracious to the man than to the physician; while the profuse display in the "De Magnete" of the Queen's badges and monograms, coupled with cupids and roses and garlands and other symbols hardly in place in so serious a scientific work, possibly indicates that Gilbert, like his greater contemporary, regarded "the imperial votress of the west" both as the Queen and as the maid in "maiden meditation fancy free." Besides, he died of a broken heart, as some say, only six months after her, and he would never marry, as he said, in order to pursue his profession the better. We can believe that as we like; but a common humanity will always recognize a thread of romance running through the life of the grave doctor.

This was the man whose great work, written in Latin nearly 300 years ago (London, 1600)—a work which lies at the foundation of all our knowledge of electricity and all our knowledge of magnetism—has now for the first time been trans-

lated into the English language, and this by an American. Again and again, during the intervening period in which two Latin reprints have appeared, 1628 and 1633, have British authors deplored the non-existence of such a translation, but not one of them has had the courage or energy to make it. Now that it is done there is a howl of dismay from the English so-called Gilbert Society (otherwise Silvanus P. Thompson), which undertook the work four years ago and has since solemnly fuddled over it, some echoes of which lament have already appeared in these columns. But Mr. Mottelay's task is completed now, and to him belongs all of the honor which is due to the first translator.

In order to understand Gilbert's position it should be remembered, first, that not a single electrical fact was known up to his time with the exception that amber, when rubbed, would attract light bodies, and this had been common knowledge for 22 centuries. Much more was known about the magnet, for the compass and even the dipping needle were in common use. But this knowledge was literally buried in ridiculous theories, of which the chief was that the magnet was in fact a living thing. Some clear light had been shed upon it by Peter the Pilgrim (Peter Peregrinus) in the 14th century, who defined its poles and gave them their names. And Cardan, before Gilbert, differentiated the attraction of the amber and the attraction of the magnet. But it should be remembered that in those days the theories of Aristotle were in force, that the logic of experiment was decried and ridiculed, and the speculations of the human brain supposed sufficient to account for all physical phenomena. It was almost a burning matter to doubt this in Gilbert's boyhood, and perhaps thus it happens that his 19 years of experimenting occurred at the end, rather than toward the beginning, of his life. But that experimenting was the true foundation of the inductive method, for the first time laid down in the work before us; true, not in the grand generalities of Bacon, but in the simpler language of the man who, unlike Bacon, did the things which he explained and substituted "the philosophy of works for the philosophy of words"

There is no part of Gilbert's book which is livelier reading than his onslaught upon the philosophy of the time, upon the writers who "deal only in words that involve in thicker darkness subject matter," the rabble of philosophasters and astrologers," and occasionally his choler gets the better of him and he consigns the works of these gentry to the "roaches and moths," or pays his respects to them, true, in Latin, but in such words that even the kindly alembic of Mr. Mottelay can resolve them into nothing but a solid and monosyllabic British anathema.

And yet we can hardly blame the impatience of a man who looked back upon 22 centuries of scholars who had humbly stared at the amber and had never taken the trouble to find out whether anything else would attract light bodies in the same way. The reader will get the best and most characteristic idea of Gilbert if he will read the second chapter of the second book first; for there are the famous lines which begin electricity: "For not only do amber and jet, as they suppose, attract light corpuscles; the same is done by diamond, sapphire, carbuncle, iris stone, opal, amethyst, vincentina, English gem, beryl, rock crystal," and then Gilbert adds an extraordinary list of other things, including glass and sulphur and sealing wax, followed by the description of the first electrical instrument—the electroscope—a mere pivoted needle which shows the attraction of the rubbed body. In this famous chapter is the first announcement of insulation—the possibility of the electric attraction being cut off by paper; the first statement that the electrical effluvia are stronger when the air is cold and clear; the first statement that it is friction which produces the electrical display, and not heat; the first statement of the field of force which surrounds the electrified body, in which field we are now beginning to discover the wonderful phenomena of the ether storms; and here, for the first time, is used the word "electric" applied to things which attract for the same reason, "*ut electrum*," as the amber. Never before had the fundamental facts of a great branch of physics thus sprung, full-armed, from a single brain.

In the beginning Gilbert's discoveries relating to the magnet were considered of vastly more importance than his revelations concerning the little-known force of electricity, and the latter thus became obscured. Conversely, in the future the title of "the first electrician," or the better one of "the father of electricity" (for he named it), now everywhere accorded him, may lead us to forget that same magnificent work in the magnetic field, for here the majority of his experiments were made. He invented the armature or keeper and discovered its effect in keeping and fortifying the force of a magnet. He discovered and announced, still in this very book, the singular properties of iron whereby it became magnetic of itself when left for a long time in the magnetic meridian. He showed how magnets could be made by hammering bars placed in the meridian, and how they could be destroyed by heating. There is not an iron worker to-day who will not be astonished by the revelations concerning the early art of iron working which he will find set forth in detail in Gilbert's book. Look at this extract: "By means of magnetic coition we test an iron ore. The ore is roasted in a furnace, is crushed, washed, dried, and so is freed from foreign humors. The loadstone being thrust among the particles collected from the bath, attracts the iron dust, which being removed by a feather brush, is caught in a crucible; again and again the loadstone is dipped in and the iron dust brushed into the crucible till nothing remains that it will attract. Then the powdered iron is heated together with halinitro till it is melted and becomes a mass of iron. Now, if the loadstone picks up the iron dust readily and easily, we deem the ore to be rich; if slowly, the ore is poor; if the loadstone seems quite to reject it the ore is judged to have little or no iron. By the same method iron particles may be separated from particles of any other metal." And finally, the outcome of all his experiments is that great generalization that our own earth is only "a huge magnet"—a generalization which took the scientific world of his day by storm, and the whole results of which we are not even now fully able to realize.

The task which Mr. Mottelay has undertaken is one of more than ordinary difficulty, as any one who has endeavored (as has the present writer) to decipher the strange Latin of the Middle Ages will readily appreciate. The stricter critics will complain, perhaps, that such a book as this ought to have received a literal, and not a free, rendering; but on the other hand, if it be remembered that the first duty of such a translator is to bring the work within the reach of the plain people and not of the students and critics who are abundantly able to read it in its original, the common sense of the course adopted by Mr. Mottelay will be apparent. He has certainly preserved the forms of expression of the Elizabethan period with remarkable fidelity, his annotations are excellent and his singularly ripe scholarship has thrown whole floods of light upon passages which, written in the language of the school men, would have seemed hopelessly obscure to any one less familiar with the ancient history of science than himself.

A word of praise is due to the publishers for the artistic and appropriate manner in which they have produced the book; the white vellum binding, the uncut edges and liberal margins suggesting the better class of books as they were issued in Gilbert's day. But the picture of Gilbert which serves as a frontispiece is an abominable photo-engraving, and should be cut out by every purchaser and promptly thrown away. It may be added that a poor *fac-simile* reprint of Gilbert's book has lately been published by a Berlin bookseller; but it will serve the purposes of those who care to have a copy of the original text at hand for comparison with Mr. Mottelay's translation.

PARK BENJAMIN.

Efficiency of Nova Scotia Coal.

A controversy is going on in Boston papers relative to the comparative merits of American and Nova Scotia coal. Statements made by Horace P. Tobey were controverted by Colonel Albert Clark, and Charles S. Bird, a Walpole manufacturer, responds at much length:

"The question," he says, "is not whether domestic coal is worth more or less per ton than Nova Scotia, but whether $1 worth of the latter will evaporate more water than $1 worth of Cumberland. If I can show that there is more value in $1 worth of Canada coal when landed here free of duty than in $1 worth of any domestic coal, it follows that a great many consumers will use the province coal.

"Within a stone's throw from where I write are the paper mills of F. W. Bird & Son. Under their steam-generating boilers have been burned thousands of tons of Nova Scotia coal, and surely they ought to know something about its merit as a steam-producing coal. When burning this grade of coal they employed a well-known mechanical engineer to make a series of practical tests in order to show the value of different kinds of coal when burned under their steam-generating boilers. Among other kinds Nova Scotia culm was tested, and the test showed that $1 worth of Nova Scotia culm, even when the duty was paid, had as much value in evaporating water as $1 worth of Cumberland.

"In 1891 Mr. George Barrus, a well-known Boston mechanical engineer, published a book called 'Boiler Tests,' in which he gave the result of many tests made by him of the evaporative merits of different kinds of fuel used in many manufacturing establishments which he had visited. It must be remembered that these tests were made by Mr. Barrus himself, and are therefore entitled to great weight. It is unnecessary, though it would be instructive, to give all the details. It is enough to say that the result of Mr. Barrus' tests shows that the total cost per day of ten hours on a 1000 horse-power plant is:

Nova Scotia culm	$60.02
Cumberland	63.38

"In other words, the Nova Scotia coal, duty paid, is 5 per cent. cheaper than Cumberland. At that time Cumberland was taken at $4.56 per ton and Nova Scotia culm at $3.28. To day Cumberland is $3.50 per ton in Boston and Nova Scotia culm $2.25, so that Nova Scotia culm to-day is proportionately cheaper than when Mr. Barrus made his tests.

I do not doubt that there are manufacturers who have found Nova Scotia coal too expensive, owing, doubtless, to wrong boiler construction. It is expensive to burn anthracite coal, for instance, under a boiler setting which has been economically burning Cumberland coal. It is almost

equally expensive to burn Nova Scotia culm coal under the same boiler setting as Cumberland. To get proper results with Nova Scotia coal some changes in the boiler setting are advisable, and such changes would be quickly made if by so doing anything could be saved."

Trade Publications.

THE BLACKSMITHS' UPRIGHT DRILLS made by Asa Goddard of Worcester, Mass., are described in a neat catalogue just issued. These drills are thoroughly well made, are powerful, and are adapted to a wide range of work.

THE LIDGERWOOD MFG. COMPANY have issued from their New York headquarters, 96 Liberty street, a new illustrated catalogue of the new Lidgerwood hoisting engines, suspension cableways and Lidgerwood rapid unloaders. It is a book of 114 pages, neatly bound, finely and liberally illustrated, and contains a fund of valuable information regarding hoisting machinery, especially that made by the Lidgerwood Mfg. Company.

A STANDARD PRICE-LIST, possessing novel features, has just been issued by Randolph & Clowes of Waterbury, Conn. It embraces their seamless drawn brass and copper tubing, sheet copper brass and German silver, brazed tubing, moldings, &c. To illustrate the general arrangement of the price-list, we will take a page of seamless drawn brass and copper tubing. This is arranged in seven columns, the first giving the outside diameters, the next three giving "extras over basis price per pound," the "approximate weight per foot No. 8 Stubs' gauge," and the "approximate weight per foot No. 6 B. & S. gauge" for brass tubing. The other three columns give the like figures for copper tubing. All are printed in black ink, except the two columns giving B. & S. gauges. Pasted in the book at the beginning of this list is the basis price of brass and copper, 16 and 19 cents respectively. The figures in the column headed "extras over basis price per pound" are to be added to the basis price. Thus to find the cost per pound of 1-inch brass tubing No. 8 Stubs', or No. 6 B. & S. gauge, we add 6 cents to the basis price of 16 cents, getting 22 cents as a result. The main advantage derived from this arrangement is that, should any fluctuation in the market make necessary a change in the basis price, a new basis slip could be sent to customers to take the place of the old one, all the rest of the price-list remaining unchanged.

JONES & LAUGHLINS, Limited, Lake and Canal streets, Chicago, have issued a new steel list. In an introductory note they call attention to the quality of the mild steel which is manufactured at their works at Pittsburgh, and state that they are now making flat, round and square bars, bands, hoops, plates, sheets, beams, channels, tees, angles, cold-rolled shafting, angle splice bars, nail slabs, billets, follower plates, bars for links and pins, bars for making chains and bolts, and steel of right quality for springs and toe calks. The pamphlet just published gives a full list of extras on flats, rounds and squares, bands, hoops, ovals, half ovals, horseshoe and wagon box, light sheets, toe calk, plow, harrow, sled shoe, shafting, and quite a variety of special products. Their new list on rounds and squares is as follows:

¾ to 3 inches	Base rates.	
3 1-16 to 4 inches	extra	$0.20
4 1-16 to 4⅜ inches	"	.40
5 to 6⅛ inches	"	.60
6¼ to 6½ inches	"	.80
6⅝ to 7⅞ inches	"	1.00
9-16 to 11-16 inches	"	.10
⅝ to 17-32 inches	"	.20
5-16 to 11-32 inches	"	.30
¼ to 9 32 inches	"	.50
3-16 inches	"	1.00

These extras have been materially reduced, as compared with the steel classification in common use.

The important suits brought in Chicago by the Crane Elevator Company for preliminary injunction against the Standard Elevator Company, and which were decided in favor of the Crane Company by Judge Blodgett, were reversed on the 18th inst. by the United States Circuit Court of Appeals and decided in favor of the Standard Elevator Company. This is the final decision in the matter of the preliminary injunction and relieves the Standard Elevator Company of the former injunctional orders. The case was a very important one in view of the large number of office buildings and warehouses in Chicago and elsewhere that had been supplied with elevators by the Standard. Their owners were threatened with damage suits, from which they are now relieved.

The Whitman & Barnes Mfg. Company have decided to erect a large plant at West Pullman, Ill. A number of manufacturing towns competed for the prize when it became known that the company had decided to locate in the vicinity of Chicago. The company secure 20 acres of land in a locality having excellent transportation facilities. They were represented in the negotiations by A. L. Conger, the president; T. C. Alden, the treasurer; C. E. Sheldon, the general manager; Vice-President Dana, Secretary Barnes and General Counsel Hiscock. The company are capitalized for $5,000,000, and now have plants located at Akron and Canton, Ohio; Syracuse, N. Y.; and St. Catharines, Ont., with branch houses at New York, Philadelphia, Boston, Cincinnati, Chicago, Kansas City and San Francisco, and one in London, from which European trade is handled. The principal line of the company is the manufacture of mowers and binders, but it is now proposed to take in other lines of agricultural implements. The company have from time to time added to their present plants, but are now compelled, on account of close margins and competition in freights, to get closer to the Western market, and this is the reason why they are going to erect so extensive a plant in Chicago. The other plants will be left to look after the Eastern and foreign trade. The company have agreed to commence the construction of their new plant by April 1, and to have it completed and in operation by August 1. It is the intention of the company to make this concern the model plant of America for the manufacture of all kinds of agricultural implements. It is proposed to erect 25 buildings of various proportions ranging from 50 x 40 feet to structures 75 x 375 feet. The engine house will be 75 x 40 feet and the boiler house 100 x 40 feet, which gives some idea of the power required. The main warehouse will be 75 x 250 feet and will be three stories high. All the buildings will be of Joliet stone and brick. The company will employ 2000 men in the shops and between 60 and 75 traveling men.

Last week at Erie, Pa., Mrs. Elizabeth Davenport and Chas. Davenport, executors of the will of the late Wm. R. Davenport, petitioned the court for permission to sell the real estate of the Erie Car Works, which failed about two weeks ago, to pay the debts of the concern. The petitioners claim that they are unable to continue the business as set forth in the will. The estate shows an indebtedness of $875,503.74, and it is claimed that the sale of the property will be sufficient to pay it in full. The Court made the order as petitioned.

The Gracey-Woodward iron furnace at Clarksville, Tenn., is making preparations to resume operations about March 1.

The Watts Steel & Iron Syndicate, Middlesborough, Ky., have blown in one of their furnaces, and it is stated that the second furnace and the mammoth steel plant will also soon be put in operation.

The Cahill Iron Works, Chattanooga, Tenn., have completed their machine shop, which is 30 x 70 feet, two stories high.

CONTENTS.

	Page.
The Sellers 40-Ton Dock Crane. Illus.	413
The Conley Process. Illustrated.	415
The Loop Proposed for Chicago "L" Roads.	415
American Turbine Water Wheels.—IV. Illus.	416
The New Armor Specifications.	417
Lamination in Metal	419
J. A. Fay & Egan Company.	420
Rope Transmission of Power	420
The Trial Trip of the "El Rio".	421
The Submarine Cable Systems of the World.	422
A New Brass Foundry. Illustrated.	423
World's Fair Notes.	423
The Schneekloth Punching, Shearing and Bending Machine. Illustrated.	425
Compound Expansion Engines.—I.	426
The New Edison Station. Illustrated.	428
Canadian Notes	430
San Francisco News.	430
The Cross & Speirs Band Saw for Metals. Ill.	431
The National Lead Company.	431
The Week.	432
Editorials:	
Manufacturers' Perplexities.	433
Manufacturing Specialties.	433
Locating Tools in a Shop.	433
Correspondence.	434
Personal	434
Obituary. Portrait.	435
Scotch Warrant Statistics.	436
Washington News.	436
Iron for Common Roads.	436
Manufacturing:	
Iron and Steel	437
Machinery.	437
Miscellaneous.	438
Trade Report:	
Philadelphia.	439
Cleveland.	439
Baltimore.	440
Metal Market	440
Financial.	440
Coal Market	441
New York.	441
The German Iron Trade.	441
Chicago.	442
Cincinnati.	442
St. Louis.	443
Boston	443
British Iron and Metal Markets.	444
Pittsburgh Freight Rates.	444
New Publications.	444
Efficiency of Nova Scotia Coal	445
Trade Publications.	446
Hardware:	
Condition of Trade.	447
Notes on Prices.	447
The Billings Hardware Company.	448
South American Freights.	448
Horton, Gilmore, McWilliams & Co.	448
The Hardware Dinner.	449
The New York State Association of Hardware Jobbers.	459
Officers of the Hardware Club. Portraits.	459
On What Basis Shall Cut Nails be Sold?	461
Export Notes.	462
Trade Items.	463
Excess Baggage.	464
Bicycles.	464
Price-Lists, Circulars, &c.	464
Weekly Prize Competitions.	465
A Cash System.	465
It Is Reported—	465
Exports.	466
Paints and Colors.	467
Coiled Oakum. Illustrated.	467
Hamper and Toilet Case Combined.	467
The Wayne Self-Measuring Oil Tank. Ill.	468
Ideal No. 3 Special. Illustrated.	468
Aluminum Cooking Utensils.	468
The Champion Hinged Clothes Bar. Illus.	469
Carpet Truck. Illustrated.	469
Murrin's Hat Rest. Illustrated	469
The Richardson Tack Hammer. Illus.	469
Steel Shop Box. Illustrated.	469
The Eureka Lawn Mattock. Illus.	469
Starrett's Improved Speed Indicator. Ill.	470
Gem Nozzle Holder. Illustrated	470
Bradley Shelf Bracket. Illustrated	470
Leonard Cleanable Hardwood Refrigerators	470
Corrugated Bit-Brace Ring. Illustrated.	470
Current Hardware Prices.	471
Current Metal Prices.	47

HARDWARE.

Condition of Trade.

THE PAST WEEK has made little change in the general situation, there being, however, something of an improvement in the volume of business. Travelers are busily engaged in their different fields, and the result of their activity is the obtaining of many orders, which are keeping jobbers and manufacturers fairly busy. Notwithstanding the fact that the market is devoid of special strength, and is characterized in a good many lines by more or less weakness, the trade are purchasing for their early requirements, the general impression being that prices on the whole are not likely to settle much lower. It is also recognized that some goods are abnormally low, with a possibility of recovery at any time. Business has to some extent been interfered with by prevalent storms and the backwardness of the season, but the tone of the trade is confident, and it is expected that the season's business will be large.

St. Louis.

(*By Telegraph.*)

The demand for Hardware continues to gain in volume as the spring advances. Shelf Hardware is included in every order received, and Heavy Hardware is also moving quite freely. The urgent demand, however, is for Carriage Bolts and Nuts, cheap Locks, Trace Chains and Saddlery Hardware of all kinds. These articles manufacturers are unable to ship as promptly as the jobbers demand, consequently there is more or less complaint from the retailers. The demand for Barb Wire and Wire Nails is improving, but prices are not being firmly adhered to. Cut Nails are not moving in very large quantities. Tin Plates, Sheet Iron and in some cases Building Tools are in good demand. Prices do not show any particular change, and notwithstanding the demand, fail to improve to any great extent, except in one or two lines of goods. The new Cut Nail list adopted on February 15 meets the general approval of the trade.

Notes on Prices.

Cut Nails.—It is difficult to report accurately the ruling prices for Cut Nails, in view of the uncertainty which for the past two weeks has characterized the market in regard to the basis for transactions. At a meeting held in Pittsburgh on the 15th inst. the Nail manufacturers, principally from the West, took action which was somewhat of a surprise to the trade at large, although those who were best informed in regard to the matter knew that it was under contemplation. At this meeting the Wire Nail card was adopted as the basis for Cut Nails, disposing at once of the National Price-List adopted two weeks before, and the regular Cut Nail card which has been in use for some time. In addition to the adoption of the Wire Nail card it was agreed that no sales or quotations should be made on any system of average. The mills pledged themselves to sell simply at a base price without regard to extras. This was regarded as an essential part of the action, as the manufacturers are very desirous of doing away with the system of averages, which in their judgment is detrimental to their interests as well as very inconvenient to the trade. The above action was unexpected by the Eastern manufacturers, and there has been some difference of opinion as to their course in view of it. A meeting was held in Philadelphia on Tuesday, in which the matter received careful consideration, and as a result the action of the meeting at Pittsburgh was ratified with some slight modifications in the card to adapt it more fully to Cut Nails. By this action substantially the same card is to serve for both Cut and Wire Nails. It was also decided by this meeting at Philadelphia that the base price for large lots should be $1.40, on dock, New York. It is as yet, however, too early to give a definite quotation on the new basis. During the past week there has been a good deal of confusion in basis for quotations, each manufacturer using his own judgment in the matter. On the whole, the tone of the market is not different from what it has been. It remains to be seen what effect the adoption of the Wire Nail card will give to prices.

Wire Nails.—The Wire Nail market continues in excellent condition, the lowest quotation being $1.40 for carloads, f.o.b. Pittsburgh, an advance of 2½ cents being made for Nails at Cleveland or Salem. Small lots from store in New York are held at $1.75, and carload lots at $1.65. The agreement among the manufacturers is promising well for the stability of prices.

Barb Wire.—The Barb Wire market is in good condition and competition is less active than some time ago. Trade is fair, though not specially heavy, but we are advised that stocks are not accumulating. Some of the manufacturers are making efforts to secure better prices, and the market, on the whole, is somewhat stronger. Quotations remain, however, without important change.

Augers and Bits.—The market for Augers and Bits, which has been fairly steady for some time, has recently shown signs of weakness and slightly lower prices are made by some of the manufacturers.

Tackle Blocks.—The Tackle Block market continues in an unsatisfactory condition. The termination of the agreement between the different manufacturers leaves them free to make such prices as they choose, and the result has been considerably lower quotations. A discount of 70 and 5 per cent. is thus made on ordinary lots, and a discount of 70 and 10 per cent. on larger orders.

Standard Fiberware.—The Standard Fiberware Company, Mankato, Minn., have recently announced reduced prices on their line of Flax Fiberware. No. 1, or plain, is made assorted colors, maroon, brown and gray; No. 5, or decorated, is made assorted, red, blue, black, brown, maroon, old gold and green, selected, with hand-painted decorations and with extra finish or striping as suits the article; No. 5X, or white, is similar to No. 5 except color. The company's revised price-list is as follows:

	Price per dozen.		
	No. 1	No. 5	No. 5X
Water Pails, 12-quart	$3.60	$4.00	$4.75
Dairy " (yellow), 14-quart No. 3, $4.00	....	4.50	....
Fire Pails, No. 1, $4; No. 2, 14-quart, $4.50.			
Sugar Pails (with cover)	5.50	6.00	....
Horse " (short, wide and heavy)	4.50	....	....
Buggy Pails (short and light)	3.50	....	....
Prison " (with cover)	7.50	....	....
Slop Jars (bal. trap), No. 5 and 5X, 14-quart	7.50	8.50	9.50
Chamber Pails, Slop Pails, Commode Pails, Nos. 5 and 5X, 14-quart	6.00	7.00	8.00
Commode Rings	1.50	1.75	2.00
Wash Basins, 10½-inch	1.80	2.00	2.50
" 12-inch	2.00	2.50	3.00
" 13½-inch	2.50	3.00	3.50
" 15-inch	3.00	3.50	4.00
Wash Bowls	....	3.75	4.25
Pitchers	....	5.25	5.75
Milk Pans (Old Gold, in No. 5)	....	2.25	2.75
Fruit Bowls	....	2.00	2.25
Keelers, 11½-inch	....	3.50	4.00
Waste Paper Baskets, 13 inches high	....	5.50	6.00
Mats, 8½-inch (for table use)	1.00	1.25	1.50
" 15-inch (for cuspidors, &c.)	3.00	3.50	4.00
" 17-inch (for slop jars, spittoons, &c.)	3.50	4.00	4.50
" 2 -inch (for slop jars, spittoons, &c)	4.00	4.50	5.00
Cuspidors, 8½-inch by 7¼ inches high	....	7.50	8.50
Spittoons, "Daisy," 8-inch (pressed)	3.50	4.00	4.50
Spittoons, 10 and 11½-inch	5.50	6.00	6.50
Peck Measures	3.50	....	....
Half-Peck Measures	3.00	....	....

Glass.—The condition of the weather during the past weak has necessitated a stop of all building operations, so there is no demand for immediate delivery of Glass. The new prices of the National Window-Glass Company have gone into operation, and early enough in the year for dealers to figure with certainty upon the cost of American Glass during the coming year. Those interested in the new company express themselves satisfied that the organization will prove a success, and that it will not conflict with any of the anti-trust laws. It is understood that manufacturers are permitted to sell their product to jobbers who are members of the National

Window Glass Company at any price agreed upon between the manufacturer and jobber, but that no Glass is to be sold to others than members of the company for less than schedule prices. This is certainly an inducement for jobbers to become members of the company, as it will pay them a good profit if they can buy Glass, say at 85 per cent. discount and sell it at 80 and 5 per cent. discount, besides putting them on an equal footing with others to obtain the best price they can in an open market. No official announcement has been made of the plans under consideration in forming the Imported Window Glass Association in this city, but it is reported that members will be under bonds not to transgress any rule made by a central committee, and that prices shall be on a sliding scale based upon quantities. The prices on imported Window Glass show no improvement up to the present time, sales being made from 80 per cent. discount to 80 and 5 per cent. discount. From reports it appears that the Plate Glass general agency plan has already stopped the ruinous cutting of prices, which was the object aimed at, without advancing them. Present quotations on Glass are as follows: American Window Glass, 2000 boxes at one time, 80 and 10 and 10 per cent. discount; carloads, 400 boxes, 80 and 15 per cent. discount; 100 boxes or over, 80 and 10 per cent. discount; less than 100 boxes, 80 and 5 per cent. discount. French Window Glass, 80 per cent. discount to 80 and 5 per cent. discount. American Plate ranges in price from 60 and 2½ per cent. discount to 60 and 5 per cent. discount. Imported Plate Glass, 60 per cent. discount to 60 and 10 and 5 per cent. discount.

The Billings Hardware Company.

A RECENT ISSUE of the *Leader* of Superior, Wisconsin, contains a very interesting account of the new wholesale Hardware house established there, as also racy biographical sketches of those interested. The leading points of the article are subjoined:

The Billings Hardware Company were organized with a capital of $300,000 in the fall of 1892 to do a wholesale business only in Hardware. Four floors of the handsome new Maryland block, built by the Land & River Improvement Company specially for wholesaling, situated at the corner of Tower and Thirteenth streets, are occupied by the business of the corporation. The dimensions of the building are 50 x 140 feet, giving 24,000 square feet of floor surface for storage room, shipping clerks, sample rooms and offices.

The building is heated with hot water, has electric elevators, offices on two sides of the main entrance finished in hard wood with aisle down the center. The company have warehouses on Tower Slip dock where boats of all lines reach them as well as all railroads without switching charge. This dock warehouse is 50 x 300 feet, and still another warehouse is now being built which is 50 x 150, both two stories high.

Col. W. P. Cockey, president of the Billings Hardware Company, is a native of Montgomery County, Md. He is 43 years of age, never held any public office, never had his picture taken and says he "has no history," which is probably true, because every enterprise he has ever touched has been an abundant financial success. Reverses, failures and misfortunes are required to make up a "history." He has built up from the ground several of the largest and most prosperous business enterprises in the Northwest. He is a tireless worker and full of resources, enterprise and managerial economy.

Rowland J. Wemyss, the vice-president, says he "has had no career." He went to Superior in 1886 as general manager of the Great Land & River Improvement Company. The town was then nothing—it did not even have an elevator. Under his management this corporation, with a capital stock of only $750,000, is now worth nearly or quite $20,000,000. It is an unparalleled record. Mr. Wemyss is not only a man of wealth but commands large financial backing, so that none of his enterprises ever wanted for an abundance of cash.

L. J. Moss, secretary of the company, was born in Iowa in 1862. The first years of his business life were passed in company with his father in the land and insurance business in Osage. During Cleveland's administration he entered the railway mail service, where he was rapidly promoted, becoming chief clerk and finally assistant superintendent of the division. He then entered the general passenger office of the Great Northern Railway in charge of the immigration and advertising department. During 1891 he carried on a real estate and mortgage loan business in Superior, in company with E. W. Duncan, an Iowa banker. He is a man of quiet tastes, self contained, obliging and honorable. He is an earnest worker in any line of action he undertakes, and has always had faith in the future of Superior. He was recently elected first vice-president of the Chamber of Commerce. He is a conservative business man, has a wide range of information, is resourceful and gifted with fine executive ability. He will have charge of the office force of the new concern, where from 20 to 30 employees will be under his command.

D. L. Billings, treasurer of the company, a native of New York, is a graduate of Yale College, a nephew of Frederick Billings of Northern Pacific Railway fame and son of O. P. C. Billings of the well-known law firm of Billings & Cardoza, New York. He is a well-educated, well-trained and careful young business man of excellent habits and promise.

Benjamin Hogan is the buyer of the house. His long experience has gained for him in Hardware circles a reputation of being one of the most capable men in his line.

G. E. Carreth, another lieutenant, is a gentleman of nine years' experience in Hardware, for the last six years' a city buyer with supervision of traveling men in the C. W. Hackett Hardware Company, St. Paul.

Charles H. Thornton, a native of Wisconsin, and four years with the Chapin-Wells Hardware Company, is city salesman.

Some of the largest manufacturers of America are interested with the persons named in the undertaking.

The entire force outside of the mere office employees has been selected with a view of getting experienced Hardwaremen of wide and recognized reputation.

The enterprise starts off with the finest Hardware building in the Northwest, an abundance of capital, the best of business experience, a splendid reputation and a good trade.

South American Freights.

NORTON & SON, 90 Wall street, have decided to re-establish the line of steamers for River Plate ports, inaugurated by the sailing of the steamer "James Watt," September 15, followed by the steamer "Pharos," whose charter, however, was assumed by the United States & Brazil Mail Steamship Company pending negotiations, which are now at an end. The shippers who for so many years have supported the Norton sail line have urged the continuance of the enterprise projected in the fall, and with this encouragement it is proposed to maintain permanently such a line hence to those ports. They now announce the steamer "Newcomer" for Montevideo, Buenos Ayres, Rosario and other ports on the Parana River, for which through bill of lading will be given. They expect to have her in loading berth at the Empire Stores, Brooklyn, by February 16, for dispatch on February 25, and a steamer every month following. These steamers, we are informed by the agents, will carry mail and a limited number of passengers in addition to freight. Current rates for this steamer are now quoted at 15 and 17½ cents for Montevideo and Buenos Ayres, and 16½ and 19 cents to Rosario, per cubic foot, ship's option weight or measurement, with 10 per cent. primage. It will be observed these are just about the normal sail rates, while shippers having merchandise for those countries are thus enabled to have their goods freighted in much less time, landed in better condition, with a reduced premium for insurance, at no increase over regular sail charges.

Horton, Gilmore, McWilliams & Co.

HORTON, GILMORE, McWILLIAMS & CO., 172 to 176 Lake street, Chicago, have made a radical change in the appearance of their Hardware store. The counting house and offices have been removed from their old location on the first floor to the second story. The new arrangement is excellent. The counting house is now located near the windows, which not only secures better light than before, but also protects the clerical force from the annoying drafts caused by the opening of street doors. In the arrangement of desks a thorough system has been followed. Bill clerks are so placed that orders pass forward from the receiving desk through the necessary hands, pricers, &c., at contiguous desks until the clerks are reached who make out bills for mailing. The cashier is close to the head of the stairs, in easy reach of those who call in to see him. Heads of departments have their own compartments, partitioned off from the main counting room. The business of the firm has continued to increase until this removal of the offices was imperatively necessary, both to secure more room for clerks and also to provide more space for laying out orders, which can be done to best advantage on the first floor. This improvement will be greatly appreciated by the patrons of the firm as well as those directly interested in the changes made.

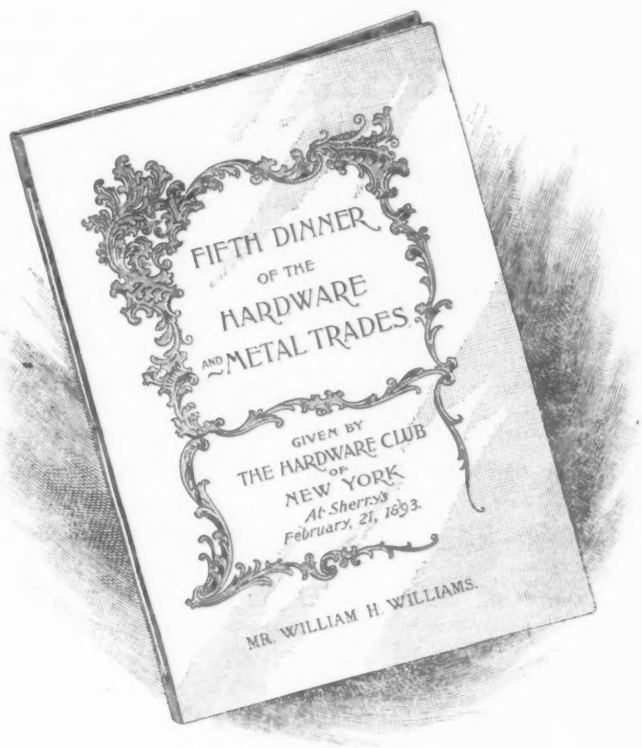
The Michigan Peninsular Car Company have declared a dividend of 2 per cent. on the preferred stock for the quarter ending February 28 and payable March 1. A dividend of 5 per cent. on the common stock was also declared, payable April 1 at the office of the New York Guaranty and Indemnity Company. Transfer books close February 20 and reopen March 2.

The Hardware Dinner.

THE FIFTH ANNUAL DINNER of the Hardware, Metal and related trades of New York was given at Sherry's, Fifth avenue and Thirty-seventh street, on Tuesday evening. The gathering was notable and representative, and while naturally a majority of those present were from New York, New England and near-by States, the far West and intermediate territory was well represented. Irving M. Scott, president of the Union Iron Works at San Francisco, the progressive shipbuilding plant that has added such cruisers and battle ships as the "Charleston," "Monterey" and "Oregon" to the new navy, had expected to be present, but was unavoidably detained at the last moment. The New York Produce Exchange and Massachusetts Board of Trade contributed to the number seated at the guests' table, which was worthily presided over by President Williams of the Hardware Club. The trade centers of St. Louis, St. Paul, Cleveland, Pittsburgh, Buffalo and other cities sent their quota, while Congress, the clergy and press did honor to the occasion in the presence of notables who responded to various toasts. The method of arranging tables and seats was much the same as that followed a year ago, while the admirable plan of providing each guest with a programme showing his place at table avoided the confusion otherwise inseparable in such a large gathering. The committee decided to fill the large room comfortably and no more, and while the tables were the same in number the space allotted to individuals permitted more freedom. An opportunity for social intercourse was afforded from six to seven o'clock for the renewal of old acquaintanceships and the forming of new ones, a feature regarded by some as one of the pleasantest of the evening. The large and handsomely furnished rooms adjacent to the banquet hall were admirably adapted for this purpose. It may be said that the Hardware trade have known each other without being acquainted; a seeming anomaly that will fast disappear under the influence of such reunions as the one just past.

The banqueting hall was arranged as shown in the diagram, there being seven tables besides the guests' table. The names of the persons who occupied seats at the regular tables are given in separate diagrams, which will be observed on the following pages. Seats at the guests' table were assigned as follows:

CHARLES E. ADAMS.
JAMES H. KENNEDY.
PRODUCE EXCHANGE.
ARCHIBALD P. MITCHELL.
BRACE HAYDEN.
WEBSTER R. WALKLEY.
ANDREW S. UPSON.
THOMAS F. KEATING.
HENRY R. TOWNE.
EDWARD S. CLINCH.
REV. W. C. BITTING.
ST. CLAIR MCKELWAY.
WILLIAM H. WILLIAMS, President.
CHARLES A. MOORE.
OAKES A. AMES.
HON WILLIAM J. COOMBS.
COL. JOHN A. COCKERILL.
MAHLON J. WOODRUFF.
RICHARD R. WILLIAMS.
CHARLES L. MEAD.
WILLIAM H. HART.
DAVID WILLIAMS.
CHARLES MILLER.
GEORGE HENRY SARGENT.
HON. JOHN H. GRAHAM.



Dinner Souvenir.

The absence of St. Clair McKelway, who it was expected would respond to the toast "The State," and from whom a letter was read: Congressman-elect John H. Graham, who is confined to his home by illness, and Geo. H. Sargent, whose previous engagement at the Harvard dinner prevented his attendance, was much regretted by those present. George J. Laighton occupied the seat assigned to Mahlon J. Woodruff, who was absent.

The *menu* was as follows:

HUÎTRES
Blue Points
POTAGE
Consommé d'Oxtail à l'Anglaise
HORS D'ŒUVRE
Bouchées à la Montglas
Olives Celeri Amandes
POISSON
Saumon à la Valoise
RELEVÉ
Aloyau de Bœuf Russe
Pommes Duchesse
ENTRÉE
Poulet à la Marengo
Flageolets.

SORBET

RÔTI
Tête Rouge
Hominy Croquettes
GLACE
Princesse
Gâteaux Bonbons
Fromage
Fruits Café

While dinner was being enjoyed the orchestra discoursed classical music and popular airs of the day, including selections from "Wang," "A Trip to Chinatown," and others, which struck so responsive a chord among those present that a large number joined in the chorus. At different times during the evening Ericsson T. Bushnell favored the company with vocal selections, which added much to the pleasure of the evening. His superb voice was greatly appreciated by all.

The dinner was an excellent one, and at its conclusion the toast list, which had been carefully prepared, was taken up. William H. Williams, president of the club, was a very efficient and acceptable presiding officer, and his speech of greeting was admirably adapted to the occasion and listened to with closest attention. Mr. Williams was especially felicitous in introducing the several speakers of the evening. It was a matter of congratulation that all the speakers, with the exception of St. Clair McKelway, whose absence is above referred to, were present. The toast list is given on following page.

Dinner Souvenir,

The dinner souvenir, which was presented with the compliments of *The Iron Age*, contained the *menu*, toasts, diagrams of the tables, names of the officers of the Hardware Club, Board of Directors, members of the Dinner Committee and of all the gentlemen present. This handsome book was 5½ x 7½ inches in size,

and contained 16 pages of ragged-edge, antique parchment, held in place by a white silken ribbon. The covers of the book were in silk cloth binding, the inside of which were lined with lithograph board upon which were shown in light purple minute engravings of Hardware, Tools, Cutlery, House-Furnishing Goods, &c.

The design on the outside of the front cover was of scroll work in Rococo style, executed in two colors of gold leaf, together with the inscription "Fifth Dinner of the Hardware and Metal Trades, given by the Hardware Club of New York, at Sherry's, February 21, 1893." As shown in the accompanying illustration, underneath the design the name of each guest was stamped in gold. The book was enveloped in a white paper cover, upon which the name of the person for whom the souvenir was intended was given, together with the letter of his table and the number of his seat. After the title page space was devoted to the names of the officers of the Hardware Club, Board of Governors and Dinner Committee. This was followed by the *menu* and a list of the toasts. The succeeding pages contained a plan of the tables and the names of the chairman and guests at the guests' table. Plans were also given of the regular tables from A to G inclusive, the position of the individual guests at the different tables being clearly and exactly indicated. In addition to these were two blank pages headed "Autographs" at the top, which were highly appreciated, and upon which many autographs were written during the evening, thus permanently associating the names of friends with the enjoyable occasion.

The Chairman's Address.

After coffee had been disposed of and cigars lighted Chairman William H. Williams called the assemblage to order, and extended his greeting in the following witty and eloquent address:

GENTLEMEN OF THE HARDWARE CLUB, GUESTS AND FRIENDS:

It now devolves upon me to call you to a respite from the arduous labors which have engaged your attention during the past two hours. The real festivities of the occasion are soon to begin, but before we enter upon them permit me to say the word of greeting that an "all-wise but unscrupulous" Dinner Committee have deemed appropriate in order that you might the better, by contrast, enjoy the good things to follow.

Some men are born great, while others, like Lord Byron, go to bed drunk and wake up famous. I attended the Hardware dinner a year ago, and being called upon (unexpectedly, of course), for a few premeditated remarks, I ventured the suggestion that the descendants and disciples of Tubal-cain in this vicinity should organize for business, social and gastronomical purposes. Now, it is one of the unwritten laws which regulate public dinners that the speakers shall not get full till after they have performed the parts assigned to them on the programme; and as my toast was not reached till nearly midnight I felt that Mr. Walkley, Editor Williams, Dr. Buckley, Mr. Hewitt and Mayor Sargent had had an undue advantage over me. However, I made the most of my limited and belated opportunities, and went home toward morning with Peter McCartee, George Germond and other choice spirits from Brooklyn more or less sober, and before I was fairly aware of it I found myself president of the club under whose auspices we meet to-night.

It has seemed to me that this statement was due you, by way of explanation of how it happens that I am here as the presiding officer at this feast. No better illustration could be furnished of how some men have greatness thrust upon them. But, gentlemen, I shall make no effort to conceal the fact that I am proud of the honor and the compliment of having been chosen as the first president of the Hardware Club of New York. In behalf of the governors of that club, it is my privilege to extend to you a most friendly and cordial greeting, especially to those of you who are outside the favored circle of our membership. The sentiment of the quotation which is printed under my name on the programme indicates the spirit which has inspired this gathering. The governors believed that they could do nothing better to promote the interests of our trade than to bring its members together in a social and friendly converse, that we might spend a few hours in an interchange of thought and greeting from which the element of sordid and calculating gain would be wholly eliminated. At the dinner a year ago I took occasion to say that I believed that most of us would admit that the friendships formed during long years of business intercourse were among the most delightful that any of us could recall. Cicero said that "Friendship was the only thing in the world concerning the usefulness of which all mankind are agreed;" and in so far as these social gatherings tend to strengthen and cement the friendships formed in business, they must certainly commend themselves to all right-thinking people.

As there is something of the animal in the best of men it goes without saying that there is nothing like a dinner to develop the social side of man's nature. An old philosopher a thousand or more years ago said "Wise were the kings who never chose a friend 'till with full cups they had unmasked his soul and seen the bottom of his deepest thoughts." This sentiment may be somewhat at variance with the advanced prohibition ideas of the present day but it must be admitted that there is at least a grain of philosophy in the statement. At all events, I am sure that men will go away from this dinner as they went away from the dinner a year ago—glad of the opportunity to meet old friends, to renew old friendships and to form more intimate acquaintance with those whom they constantly meet in the pursuit of business.

GRACE.

REV. W. C. BITTING.

Some hae meat that canna eat,
And some would eat that want it;
But we hae meat and we can eat,
Sae let the Lord be thankit.—*Burns.*

Greeting, - - - MR. WILLIAM H. WILLIAMS.

No profit grows where is no pleasure ta'en.—*Taming of the Shrew.*

TOASTS.

1. **Trade and Finance,** - HON. WILLIAM J. COOMBS.

Money makes the mare go.

Silver and gold are not the only coin; virtue, too, passes current all over the world.—*Euripides.*

2. **Tubal-cain's Place in Life,** - REV. W. C. BITTING.

In other part stood one who at the forge
Laboring, two massy clods of iron and brass
Had melted.—*Milton.*

3. **The State,** - - MR. ST. CLAIR MCKELWAY.

A ginooine statesman should be on his guard,
Ef he must have beliefs not to b'lieve 'em tu hard.—*Biglow Papers.*

4. **The Amenities of Business,** MR. CHARLES A. MOORE.

An affable and courteous gentleman.—*Taming of the Shrew.*

5. **Tendencies,** - - - MR. HENRY R. TOWNE.

News fitting to the night.—*King John.*

6. **Our Club,** - - MR. RICHARD R. WILLIAMS.

Iron sharpeneth iron; so a man sharpeneth the countenance of his friend.—*Solomon.*

Good men and true.—*Shakespeare.*

7. **Sword and Pen,** - - COL. JOHN A. COCKERILL.

I'll make thee glorious by my pen,
And famous by my sword.—*Marquis of Montrose.*

The pen became a clarion.—*Longfellow.*

8. **Sketches,** - - - MR. WEBSTER R. WALKLEY.

Perhaps it may turn out a song,
Perhaps turn out a sermon.—*Burns.*

In the hope to meet
Shortly again and make our absence sweet.

—*Ben Jonson.*

The First Toast.

At the conclusion of these remarks the chairman introduced Hon. William J. Coombs in a few well chosen words:

To almost every department of human usefulness, the Hardware trade has contributed its quota of illustrious names. It gave to literature one of its brightest jewels in the person of Washington Irving. It has furnished the cities of New Haven and New York with their most distinguished mayors and it has given to Congress a Coombs.

It is a many-sided pleasure that is mine in introducing him. In the first place, I am sure he has something to say which it will be worth while to hear. Then, I know that a great many of you, like myself, are very glad to see him and will be equally glad to hear him, because of your personal attachment for him, and thirdly, as a Republican—if I may so declare myself in the city of New York—I cannot wholly repress a feeling of satisfaction that, while he is delighting us to-night by the charm of his personality and the felicity of his speech, he is not doing any mischief at Washington. Moreover, the very fact of his presence at this feast is of itself a guarantee that, for the time being, at least, the country is safe; for in his letter acknowledging our invitation, he qualified his acceptance by saying that he would be most happy to come, if no important vote made his presence at the Capital to-nigght imperative. Gentlemen, fill your glasses and give a hearty greeting to our personal and distinguished friend, Mr. Coombs.

Mr. Coombs spoke as follows in response to the toast "Trade and Finance:"

If there is any class of men in this world who I can greet as acquaintances and friends it is the Hardware Trade. I don't count myself an old man, and yet I find myself, to-night, standing here as the representative of a past age in the Hardware trade. Reference has been made in my hearing to a previous organization of the trade before the war times. I was a member of that organization and I attended its two dinners—I think that only two dinners were given. Then came the troublous times of the war and the organization was abandoned. But I don't intend, to-night, to spend my time in reminiscences, although I am tempted to do so. When I think of the time when I began in the business, when in a great measure it was a business of jobbing, the manufacturer seldom found his way to this market, except to sell his goods to the jobber. There were a few establishments like Peck & Walter, or the Russell & Erwin Mfg. Co., who had their houses here. But the manufacturers were mostly represented, if represented at all, by agents in small apartments, not the mammoth stores which they occupy at the present day.

In looking for an illustration of the advancement of American industries, I can find none which so fitly illustrates it as the manufacturer of American Hardware. In nothing so much has the genius of American ingenuity and skill developed so rapidly and in such fine proportions and with such regularity as in the Hardware trade. From the time when the New England manufacturer amused his winter hours—the long winters—in manufacturing Hardware which he sold to the New York merchant, until the present time, when the manufacturer has spread from New England over the West, and is now covering the South, I cannot explain, and gentlemen, I cannot sufficiently characterize, the step it has taken—its enormous spread and advancement.

I remember, gentlemen, when the exportation of American Hardware was limited to a few articles of Hardware, and those on account of their superiority and excellence. I have lived to see the time when American Hardware of every kind finds a ready market in every market of the world in competition with that of any other country, and within the last month it has come to pass, gentlemen, that we find that the armor for the ironclads which we are building can be produced cheaper and better in the United States than in any foreign markets. (Applause.) The Cramps have announced that they thought that were they permitted to bring the foreign armor here free of duty it would not be as cheap and good as the American armor, which they can buy from our rolling mills and manufacturers.

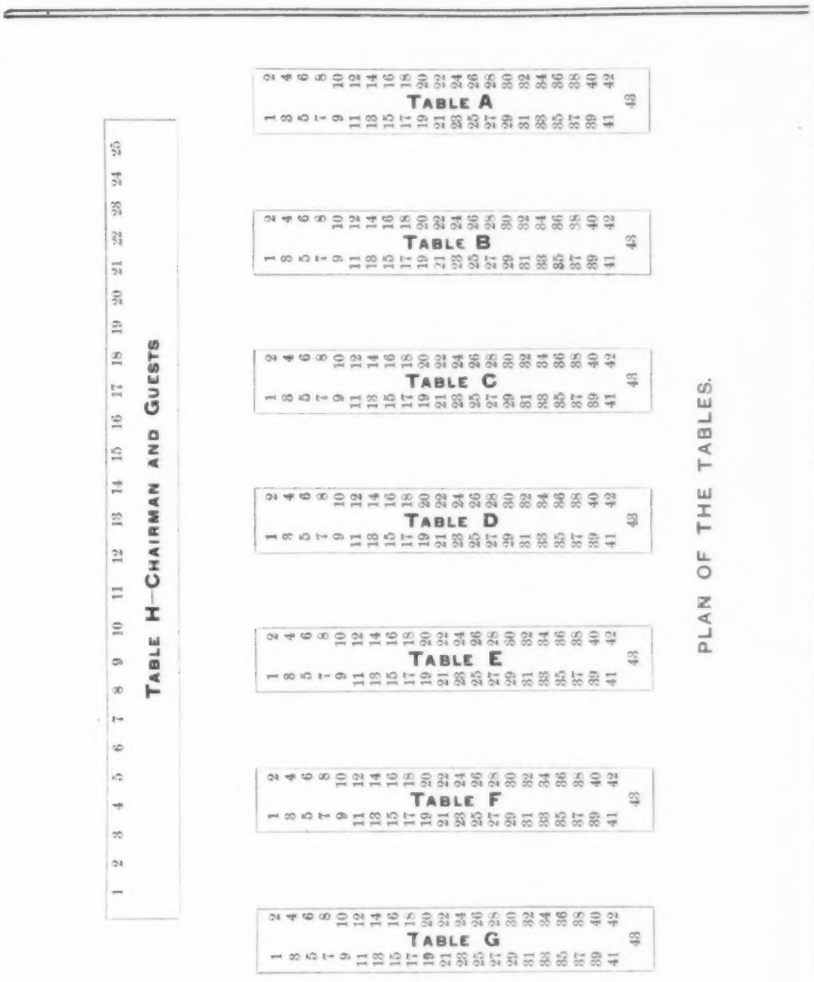
Now it has been said, gentlemen, by economists, that any nation which excels in the production of iron must take the lead in all manufactures. That as they were graded upon the production of iron, so they must be graded in the manufacturing classes of the world. I think that, to-night, we can felicitate ourselves upon the thought that America has taken her stand as the first iron producing country of the earth and that from this time onward we will lead all manufacturing nations of the earth in that particular. (Applause.) Now, gentlemen, you expect to hear something from me in relation to finance. What shall I say? If I should go from table to table in this room to-night I would find, I believe, one sentiment, and that is, that our Government should only authorize a currency to go in any part of the earth which should be interchangeable with the currency of any people of equal value. (Applause.) I look forward to the time, gentlemen, when this country will become one of the chief suppliers of what the earth needs. Certainly in our agricultural and later in our manufacturing productions I see the necessity of keeping our currency sound.

After referring to the position our currency occupies in other countries, and the feelings of some men on the silver question, he continued:

And yet I feel that there is enough solid sense and enough solid judgment in the Representatives in Congress to destroy the evil under which we are now laboring. And I believe, gentlemen, if it is not done at this session of Congress, that the next session will certainly see the repeal of the Sherman act for the purchase of silver. (Great applause.) It has been announced that this question has been tried during this last session of Congress, and that it has failed. I don't think it was a fair trial, and I take this opportunity before so many gentlemen to give a history of the vote which was taken at this time.

The speaker then explained why, in his opinion, the repeal of the Sherman act for the purchase of silver failed to pass during this last session of Congress, after which he continued:

Now, I do not propose to spend more of your time, gentlemen, in talking of these dry subjects. You have met upon a festivication, and I believe in these festivications. They relieve the monotony of business; they add a charm to the daily life of business. I don't feel that in going into Congress I have left business. I look upon myself as a business man in Congress, and I wish to say, gentlemen, what may not be known to most of you, that I am the only merchant in the House of Representatives. (Applause.) I don't know that there is even a storekeeper, a country storekeeper, in the House, representing anyone who can claim the name of merchant except myself. I often think



PLAN OF THE TABLES.

when those questions which require some practical solution come before the House, how pleasant it would be if I could gather around me a score or so of men with whom I am in the habit of doing business and settle the questions on business principles. (Applause.) I don't know, gentlemen, in relation to myself, any party lines. I was not elected to Congress on any party lines that I know of. I was sent to Congress as a business man, because I had experience which the Government had need of in certain directions. (Applause.) I don't know that I have been called upon by my party to make any particular pledges. The party have been willing to take my experience as my guide, and I want to say to you to-night, gentlemen, that if you can send to Congress more business men, and you owe it to yourselves to do so, and if you stop sending so many lawyers and agitators to Congress, and send men who are in the habit of doing what they undertake to do (great applause); if you will stop studying political considerations so much and look for the men to send there, and send them, that the interests of this country will be better taken care of. There is too much theory and too little experience generally.

President Williams introduced Mr. Ericsson F. Bushnell, who rendered "Down Deep Within a Cellar," and on being encored responded with "Rocked in the Cradle of the Deep," both of which vocal selections called forth long and hearty applause.

The Second Toast.

After the applause had subsided the president introduced Rev. W. C. Bitting:

It is related of Governor Russell of Massachusetts that meeting Diogenes on the street one morning in the Modern Athens, with one of Edison's new electric lanterns on his arm, he asked him what he was looking for, and the cynical old tramp made the somewhat famous reply that he was seeking for an honest man. Later in the day the two met under the gilded dome of the State House and the Governor said, "Well, have you found him?" "No," said Diogenes, testily, "I've given that up, and I'm looking now for the son of a gun who stole my lantern." Now, had that aged Athenian ever had the good fortune to attend a dinner of Hardwaremen his embarrassment would have been, not the difficulty of finding an honest man, but of finding one who did not measure up to the full standard of absolute veracity.

Probably no trade in Christendom stands less in need of the countenance or the indorsement of the clergy than that represented here to-night. The code of morals and of ethics practiced in the manufacture and distribution of Hardware might well be taken as a model upon which to found a religion or to establish a school of philosophy. Nevertheless, we welcome the representatives of the clergy as coworkers in the cause to which our lives are so unselfishly devoted—the service of our fellow men, and especially when they come to us in a spirit of warm sympathy and manly goodfellowship. Such a representative it is now my pleasure to present, in the person of Rev. Mr. Bitting, who will speak to you on the interesting subject of our great Patron Saint, "Tubal-cain."

Mr. Bitting then responded to the toast of "Tubal-cain's Place in Life" in an elegant and witty address, which delighted the company and called out frequent applause. The opening part of the speech was devoted to a showing the way in which Iron, Brass and other metals are referred to in Scripture, showing much painstaking research, while at the same time many happy hits were made. The speaker then proceeded to illustrate the manner in which terms connected with the Hardware and Metal industries are inwrought into our language and common speech. All this was done in Mr. Bitting's inimitable manner. We regret that we are unable to do justice to this unique and most admirable address in any extracts which we might give.

The Third Toast.

According to the programme, St. Clair McKelway was the next speaker, but was prevented from being present on account of illness. The president, after reading a letter from him expressing his regret at being absent, introduced Colonel John A. Cockerill, in remarks in which he referred to the fact that the West has furnished us not only a magnificent market for our products, but also some of the brightest names in politics, literature, art and state craft. Special reference was made to the success achieved by Colonel Cockerill in St. Louis, and to his coming to teach New Yorkers what a live journal should be, so efficiently that he is rapidly convincing New Yorkers that his mission was well-timed.

Col. Cockerill, whose subject was "Sword and Pen," spoke in part as follows:

As much as I admire the greatness of your guild, and as much as I understand its importance in this wonderful country, I never expected to see so many handsome and intelligent representatives of that art. In my going about I am occasionally called upon to look upon a great many audiences from the platforms at the end of the banquet hall. The men are books to me, and as I look at you to-night I think that I can say, as did one writer about Cromwell's roundheads, that you could "see steel in the eyes of those roundheads and iron in their beards."

We have no means of conveying ideas, of molding the public mind to action, except through the great agent, the press. Russia is a tyranny, as some one has said, tempered by the dagger; we have here the government of the press solely tempered by the libel law. By dint of hard work the press is able to keep the judiciary in pretty good condition. We have made the judges occasionally somewhat afraid to do wrongful things, and we have lifted the judiciary slightly above the ordinary. The judges all admit that they are afraid of the newspapers.

Your text upon which I have to speak opens up a vast avenue of thought. A great English writer has put into the mouth of a great French cardinal an aphorism that "beneath the rule of men entirely great the pen is mightier than the sword." A great man with a pen is certainly a great power, but a fool with a pen is the worst thing I know of. Witness Bismarck, Bonaparte and Grant.

Dear old General Sherman, who was a very particular friend of mine—I was one of his boys in the army—and who could speak with the sword, had a great dislike for us fellows of the newspaper profession, and on the last occasion upon which he ever addressed a meeting in this city

Table A

The Iron Age and The Metal Worker E. H. Darville	1	2	The Iron Age D. L. Williams
The Iron Age and The Metal Worker	3	4	The Iron Age Herbert M. Williams
F. T. Witte Hardware Co. F. T. Witte	5	6	Wiebusch & Hilger Charles F. Wiebusch
Wiebusch & Hilger R. Leinhart	7	8	Wiebusch & Hilger W. M. Taussig
vom Cleff & Co. Robert vom Cleff	9	10	vom Cleff & Co. Arthur H. Kennedy
G. I. Mix & Co. W. L. C. Glenney	11	12	G. I. Mix & Co.
Norwalk Lock Co. Frank S. Cowles	13	14	Norwalk Lock Co. F. D. Berthet
Patterson Bros. E. Stagg	15	16	Patterson Bros. R. N. Brundage
Peirson Hardware Co. Henry R. Peirson	17	18	A. F. Brombacher & Co. A. F. Brombacher
P. L. North & Son F. T. North	19	20	A. F. Brombacher & Co. W. H. Hanna
Russia Cement Co. J. A. De Camp	21	22	Metal D. T. Mallett
John Colby	23	24	Metal G. E. B. Putnam
Guilford Dudley	25	26	H. M. Kleppish
Poughkeepsie F. & M. Co. H. W. Bullard	27	28	Alford & Berkele Co. Alonzo Alford
R. K. Carter	29	30	Voigt, Starr & Co. W. A. Voigt
Hatch & Holmes Mfg. Co. G. C. Hatch	31	32	Hartman Mfg. Co. A. T. Brook
W. H. Cole & Sons Allen Cole	33	34	Murtha, Appleton & Co. J. L. Appleton
Lamson & Goodnow Mfg. Co. W. A. Willard	35	36	J. Curley & Bro. T. F. Curley
J. Russell Cutlery Co. A. R. Dustin	37	38	J. Russell Cutlery Co. Alexander McL. Rowland
Haydock & Bissell E. Bissell, Jr.	39	40	M. Stransky
Friend P. Fitts	41	42	Frank Van Name
	43		

Haydock & Bissell
Eugene Bissell

I introduced him. The occasion was a dinner at the New York Press Club. Knowing some of the General's antipathies, in introducing him I took occasion to remark that he had opposed the newspaper men and the newspapers a great deal, and thought it a fitting time for him to make apologies. The General said: "The war is over. I have nothing to forget, and nothing to forgive. I have been very hard on you fellows in the past, not so much because you did not tell the truth, but because you told too much of it. You bothered us in the army, you kept the people at home accurately informed of the situation, and you kept the enemy fully acquainted with our movements. I be cussed if I don't think I ought to hang some of you yet."

In this very material age in which you

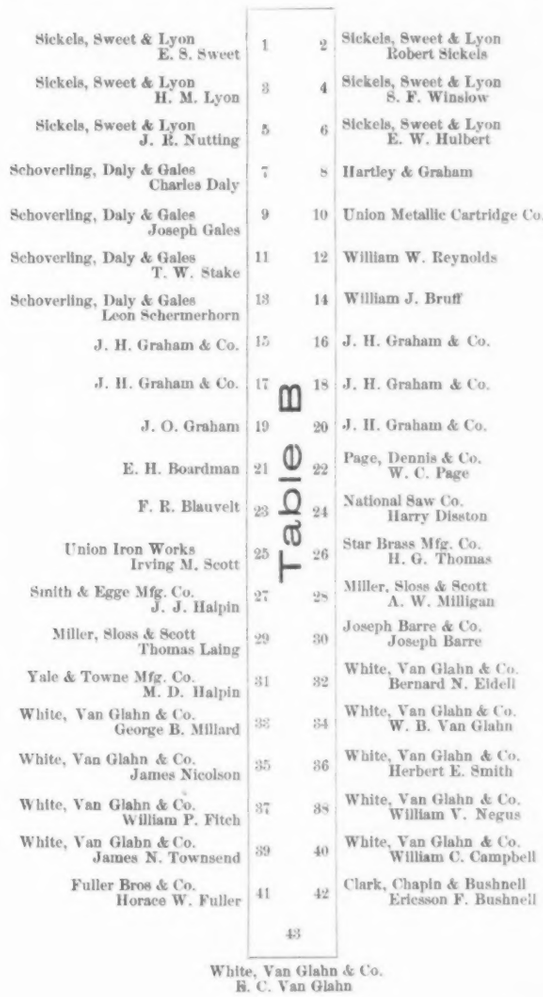


Table B
Sickels, Sweet & Lyon E. S. Sweet 1
2 Sickels, Sweet & Lyon Robert Sickels
Sickels, Sweet & Lyon H. M. Lyon 3
4 Sickels, Sweet & Lyon S. F. Winslow
Sickels, Sweet & Lyon J. R. Nutting 5
6 Sickels, Sweet & Lyon E. W. Hulbert
Schoverling, Daly & Gales Charles Daly 7
8 Hartley & Graham
Schoverling, Daly & Gales Joseph Gales 9
10 Union Metallic Cartridge Co.
Schoverling, Daly & Gales T. W. Stake 11
12 William W. Reynolds
Schoverling, Daly & Gales Leon Schermerhorn 13
14 William J. Bruff
J. H. Graham & Co. 15
16 J. H. Graham & Co.
J. H. Graham & Co. 17
18 J. H. Graham & Co.
J. O. Graham 19
20 J. H. Graham & Co.
E. H. Boardman 21
22 Page, Dennis & Co. W. C. Page
F. R. Blauvelt 23
24 National Saw Co. Harry Disston
Union Iron Works Irving M. Scott 25
26 Star Brass Mfg. Co. H. G. Thomas
Smith & Egge Mfg. Co. J. J. Halpin 27
28 Miller, Sloss & Scott A. W. Milligan
Miller, Sloss & Scott Thomas Laing 29
30 Joseph Barre & Co. Joseph Barre
Yale & Towne Mfg. Co. M. D. Halpin 31
32 White, Van Glahn & Co. Bernard N. Eidell
White, Van Glahn & Co. George B. Millard 33
34 White, Van Glahn & Co. W. B. Van Glahn
White, Van Glahn & Co. James Nicolson 35
36 White, Van Glahn & Co. Herbert E. Smith
White, Van Glahn & Co. William P. Fitch 37
38 White, Van Glahn & Co. William V. Negus
White, Van Glahn & Co. James N. Townsend 39
40 White, Van Glahn & Co. William C. Campbell
Fuller Bros & Co. Horace W. Fuller 41
42 Clark, Chapin & Bushnell Ericsson F. Bushnell
43
White, Van Glahn & Co. E. C. Van Glahn

gentlemen of the Hardware profession have contributed so much to our newspaper facilities, I am afraid it is becoming a purely business proposition—from one hand to the other. We have found out in our profession how to buy paper for 3 cents per pound and sell it for 7 cents after putting a lot of reading matter on it which you fellows appear to enjoy. I am getting to be something of a reformer.

After stating that the cause of his entering New York journalism was because he considered it possible to establish a new line of work, the speaker continued:

I believe that the era of the great editor has passed. He has been put into the vocative of the correspondent at the remote end of the telegraph wire. There are scarcely any great editors who mold and direct thought in this country who will compare in any sense of 1 per cent.? I am telling you the truth.

The speaker then compared the work and disposition of James Gordon Bennett the elder to that of Napoleon, after which he described the kind of paper a man should have in his home in the following terms:

After all, we have a varied lot of journals. I can look down the elevated trains in the morning and tell you the kind of people in the train by the kind of newspapers they are reading. I do not believe there ought to be anywhere a man who would take into his family or his home, where his children can read and be contaminated, a newspaper whose publisher he would not be willing to entertain at his table. A newspaper that has no character has no more place in any man's household than a characterless man. The public has it in its power to regulate journalism. Just as long as you ask for sensationalism in journalism you will find people ready to take advantage of that fact. The power of correcting is with you. I want to say sincerely about this great profession of journalism, while this great influence may draw to it men purer, wiser and better equipped, I hope we have only reached the dawn of its potentiality; that it may yet improve and grow grander and be indeed the anchor and bulwark of this wonderful system of free government of ours.

The Fourth Toast.

In introducing Charles A. Moore the chairman spoke as follows, touching happily on the question of consolidation of New York and Brooklyn:

It was my wish when this dinner was first talked about that it should be given in Brooklyn. and my object in that wish was that, as you know, we have over in Brooklyn just now a question more or less alive, which is variously termed annexation and consolidation. It means the consolidation of the two cities of New York and Brooklyn into one great municipality. It occurred to me that if we should get so important and influential a body as the Hardware Club of New York over into Brooklyn, and they might see and appreciate Brooklyn and her hospitality, the question of consolidation would be at once settled. I was overruled in my wish, but I got there just the same, for you will notice that out of the eight speakers upon this programme six of them are from Brooklyn, and I felt certain that when you came to see Charles A. Moore those of you who lived in New York would say, "Brooklyn, we want you." I have the pleasure of now introducing my friend, Charles A. Moore of Brooklyn.

Mr. Moore then spoke as follows, in response to the toast, "The Amenities of Business:"

Reference was made to-night to the honor of being the first president of the Hardware Club. I think you will find, gentlemen, that he is the best president of the first Hardware Club. From what I see here to-night this Hardware Club will not be like a club down-town known as the Lawyers' Club, of which I have the honor to be a member. When I asked a member how it came to be called the Lawyers' Club, he replied, "Because there are so few lawyers in it." That will hardly be the case with the Hardware Club. The thunder has been stolen by the speakers before me. I had it all picked out here in my notes to refer to the manly beauty and intelligence of the members of the Hardware Club, but can only endorse what Colonel Cockerill has said. He has said it truthfully. Certainly, it is a great honor which my friend, Mr. Williams, is accustomed to occupy, of being the president of such a gathering of business men. I say business men, because it is evident that the gentlemen present here are men who have a visible means of support. I consider that, in a country like America, and there is only one America, to be the foundation stone of its success and progress, because it is composed of citizens who, in the main, have visible means of support. I believe that while it is sneered at sometimes, and occasionally referred to perhaps in not a complimentary manner, the success of this country has been accomplished by the hustlers who had to get there because there was no meat in the house.

After referring to the fact that his physician considered him unfit to attend the dinner because of physical disability, he continued:

Reference has been made here to Iron and Steel, and I am going to digress a moment and trespass a little on the sanctity of personal reference. I was delighted with the magnificent singing here to-night of Mr. Bushnell, and it brought to my mind this fact, which I

have narrated to our friend the Congressman from Washington, that the gentleman who so greatly delighted you is the son of a gentleman who from his own personal funds paid for the construction of the ship that revolutionized the naval warfare of the world, and that he did this after the Government and the members of the Cabinet and Congress had refused to advance the money to build the Monitor, and that she fought the battle the personal property of the father of the gentleman who has honored us with his singing this evening. I have taken the liberty of referring to this, as his singing suggested it to my thoughts. I think it is a great honor to be the son of such a father. That is one of the possibilities of the sons of Tubal-cain.

Following that, the thought has suggested itself that in a brief interview the other day with some noted bankers who desired that I should go into Pennsylvania and negotiate the purchase of a manufacturing establishment there, I remarked to them: "You don't want that property; you are not fitted to handle such a property." They looked at me in a very much surprised way. I said to them, "You have not the courage to handle that property simply because bankers are not possessed of the necessary courage to manufacture." I consider that to enter into the manufacturing business requires more moral and physical courage than to engage in any other business extant. Bankers want to get out whole with one hand before they let go with the other. The manufacturer has to put out his hard-earned money. He pays it out for the raw material which he molds and forms into useful articles. He runs the chances as to whether his tastes are suited to the public's tastes. Then he has to create a demand for that article. The payroll every Saturday must be paid. A note going to protest in the ordinary course of business is not to be compared to a miss of your payrolls. The manufacturer contributes something to the material wealth and welfare of the country. Of course, he has to have his assistants in the distributing sources. That suggests the fact of reciprocity. We all appreciate reciprocity in its practical form. We have to reciprocate in the dealings which we have with each other as houses in the matter of discounts, and so in the practical walks of life I look upon those who take the raw material and mold it and form it into useful articles as contributing more to the material wealth and welfare of the country than any other class of men.

I think that in business, and in this business especially, there should be patriotism and loyalty. I think that there should be patriotism among business men of a character to cause them to speak well and think well of their fellow-men in business. If we don't think well and speak well of each other, who can we expect to think well of us? There is much in raising the standard of a man's occupation. Many a business has been sneered at and looked upon with some question in older countries where so-called trades people must occupy a minor position socially. That is due to their cowardice and lack of loyalty and patriotism to the business they are engaged in. If a man is ashamed of his business he should get out of it. I think it devolves upon every man in business, instead of looking upon his neighbor with jealous eyes, ready to throw out a slur or hint not particularly favorable, to think what effect it will have upon the public generally. I think every man who is engaged in business should not be afraid to have it known what that business is and should be proud of it.

Reference was made by our president to remarks made at the last dinner in regard to friendship and business. I am a firm believer in that. I believe that such gatherings as these tend to cement together and to make men feel that there is something more in life in meeting their fellow-men than to size them up and find how small a discount they will stand.

Mr. Bushnell then sang "Friar of Orders Gray," and upon receiving a very heartily expressed encore responded with "Punchinelle."

The Fifth Toast.

The chairman, introducing Henry R. Towne, whose toast was "Tendencies," spoke as follows:

GENTLEMEN: The next speaker is one of those referred to by Mr. Moore as a "manufacturer of courage." That that courage has been crowned by success I am sure no one will more rejoice than his fellows of the Hardware trade. He is to speak to-night on "Tendency." Whether he means the tendency of the trade, tendencies of dinners or the tendencies of his own life of manufactures, I don't know. But whatever he means it is perfectly safe to leave to his qualified ability the expression of the tendency as set down upon the programme. I have pleasure in introducing Henry R. Towne.

Mr. Towne responded: It is a time-honored usage which rarely passes on an occasion of this kind without being honored, to make some reference to the "feast of reason and flow of soul." I was somewhat surprised that no one has referred to it previously, but I propose this evening to substitute for it another almost equally time-honored reference, and having our bodies so well filled with food, I propose to suggest some food for reflection. It is the usual custom to expect of some speakers, on an occasion of this kind, that they will do the thinking. I am going to ask you to-night to let me do the suggesting; and that you shall do the thinking afterward. I propose, therefore, to briefly refer to some of the tendencies which are about us, and which, I think, will interest us—the tendencies which surround individuals and corporations which have preceded and are forerunners of those which are to come after. We are, all of us, interested in the things of the future. Even I venture to say our skeptical Colonel Ingersoll would be interested, and in considering, therefore, the tendencies of our day we will find food for thought. American Hardware, which is so well represented here to-night, is one of the typical products of our people, and this fact has been touched upon by some of the previous speakers, but I think they have failed to fully emphasize how thoroughly typical of the inventive and original character of the people, and notably of the New England people, is that product whose representatives are assembled here to-night.

In what I have to suggest as food for thought concerning the tendencies which are at work about us I will refer thoroughly to those which relate to American Hardware. If the topic fails to interest our guests I will plead in advance that I shall be brief. If it fails to interest those who are distributors of the product, I can only plead that I am one of the manufacturers. Although what I have to say is addressed chiefly to questions concerning the trade, it would be an unwise motion at the outset not to make some reference to the tendencies that are national and not peculiar to our trade, but common to all. My purpose, however, is to touch as briefly as possible on each tendency, not to discuss or analyze it, but merely to throw out, as I said at the outset, food

Table C

Supplee Hardware Co. W. W. Supplee	1	2	Fayette R. Plumb
Supplee Hardware Co. W. D. Supplee	3	4	Chas. E. Grange
Plumb, Burdict & Barnard Ralph H. Plumb	5	6	Frank S. Pownall.
L. Van Ostrand	7	8	W. H. Quinn & Co. W. H. Quinn.
Maltby, Henley & Co. W. I. Henley	9	10	W. H. Quinn & Co. C. H. Goldberg
Maltby, Henley & Co.	11	12	Atha Tool Co. Ed. Hannah
Topping Bros. Hobson Halliday	13	14	Atha Tool Co. John Hausman
Topping Bros. W. D. Zehnder	15	16	Topping Bros. J. P. Topping
Topping Bros. F. W. Blossom	17	18	Topping Bros. T. W. Kiley
American Wringer Co. H. W. Vaughan	19	20	Topping Bros. John Bertram
American Wringer Co. Geo. Reuter, Jr.	21	22	Woolley, Baynon & Moore Co. A. G. Phillips
J. A. Van Winkle Co. Edo Van Winkle	23	24	Woolley, Baynon & Moore Co. C. A. Baynon
Union Nut Co. Geo. F. Eberhard	25	26	American Wringer Co. J. F. Hemenway
Union Nut Co. J. L. Dill	27	28	Union Nut Co. I. S. Ventres
Union Nut Co. L. L. Ensworth	29	30	Union Nut Co. Geo. M. Myers
Union Nut Co. Thaddeus Smith	31	32	Union Nut Co. L. F. Tissot
Union Nut Co. S. L. Way	33	34	Union Nut Co. J. B. Clapp
Union Nut Co. C. C. Lewis	35	36	Union Nut Co. S. J. Johnson
Millers Falls Co. E. P. Stoughton	37	38	Union Nut Co. E. J. Huking, Jr.
Millers Falls Co. Geo. E. Rogers	39	40	Union Nut Co E. H. Clark
Union Nut Co. J. A. Van Winkle	41	42	Union Nut Co. E. B. Sheffer
		43	

Union Nut Co.
J. L. Varick

for future thought. As to our national tendencies, on which I think the serious and thinking members of both parties unite, we will all agree in placing first of all as most important the one we take the greatest interest in, because of its close relationship to our business interests; the tendency which I believe to have a deep interest for all of us is the tendency to sound money. The next most important tendency in our national affairs is the tendency to better the civil service.

After referring to the condition of civil service in England and the improvements which have been made in this direction by the English within the past 30 years, he expressed the hope that we might see true civil service reform in this country.

credit, to more safe conduct of business, but, unfortunately, with a growing and rather bad direction to longer credits. A tendency more to mind one's own business and less to speculate in outside matters, to better goods and lower prices. A tendency to great prosperity, yet with downward prices, except where checked by combination. A tendency to large concerns, larger each year than before, and to the disappearance of smaller concerns. *Bradstreet* tells us that of the failures in the United States, 90 per cent. were reported of concerns whose capital was less than $5000. This tendency works hardship to some individuals, but is a benefit to the community, only beginning to be understood. It is a transfer of labor from channels into which it is only partly employed or not usefully employed,

Table D

The Iron Age and The Metal Worker Arthur H. Gregory	1	2	W. H. Belcher
The Iron Age and The Metal Worker A. J. Barnett	3	4	The Iron Age and The Metal Worker D. J. Scully
The Iron Age and The Metal Worker W. K. Horton	5	6	C. H. Younger
Underhill, Clinch & Co. P. K. Brown	7	8	Underhill, Clinch & Co. E. A. Tissot
Underhill, Clinch & Co. John Rofkar	9	10	Underhill, Clinch & Co. F. E. Underhill
Marten Doscher	11	12	Underhill, Clinch & Co. Henry Luhrs
Sargent & Co. G. F. Wiepert	13	14	Chadborn & Coldwell Mfg. Co. E. T. Smith
Weaver, Palmer & Richmond Lee Richmond	15	16	Chadborn & Coldwell Mfg. Co.
Weaver, Palmer & Richmond G. D. Palmer	17	18	Mallory-Wheeler Co. W. G. Hill
Sargent & Co	19	20	Sargent & Co. H. B. Clapp
P. W. Gallaudet	21	22	Sargent & Co. R. R. Breese
Van Wagoner & Williams Co. J. J. Teeple	23	24	Sargent & Co. E. V. Bayard
Van Wagoner & Williams Co. C. T. Stork	25	26	Sargent & Co. T. V. Hussey
Van Wagoner & Williams Co. G. W. Van Tine	27	28	Dunham, Carrigan & Hayden Co. R. C. Hopkins
Van Wagoner & Williams Co. C. S. Van Wagoner	29	30	Yale & Towne Mfg. Co. W. F. Donovan
W. B. Smith	31	32	Yale & Towne Mfg. Co. G. E. White
C. J. Stebbins	33	34	Underhill, Clinch & Co. A. L. Runyon
Underhill, Clinch & Co. W. W. Glover	35	36	Chadborn & Coldwell Mfg. Co. L. M. Smith
American Screw Co. Olney Arnold	37	38	Brass Goods Mfg. Co. W. F. Hyatt
Sargent & Co. T. J. Atkins	39	40	American Screw Co. J. A. Nealey
Nicholson File Co. S. M. Nicholson	41	42	Sargent & Co. George Munson
		43	

Underhill, Clinch & Co.
A. D. Clinch

He then spoke of broader markets for our products, as follows:

The next tendency is to fair trade and broader markets and in which there is no group of interests more concerned than that interest represented here to-night. Another tendency is the inauguration of our merchant marine to-morrow by the unfurling of our national flag upon one of the ocean greyhounds. (Applause.) Another tendency most aptly advanced is the breaking down of party lines on broader questions of the national welfare, by the appointment by a Republican President of a Democratic judge and the nomination by a Democratic President-elect of a Republican cabinet officer. Coming next to the questions which concern us in our own interest, they group naturally into two classes—the commercial and manufacturing. In our commercial divisions I note the tendency to more cautious

and forcing it into higher channels where it will have higher and better efficiency. From these various tendencies comes another tendency—on the other side of our business and the closer approach of the purchaser and consumer. On the manufacturer's side of our busines I note a tendency constantly to higher quality and better design of products of every kind. Most especially do we notice a tendency to better taste and to better adaptation of products to their uses. A tendency to larger use of machinery and of less dependence on skilled labor. A tendency to the specialization of silver as seen in all the arts and sciences; to the enlargement of the plants and hence to greater establishments. We notice a tendency to the aggregation of products on lines of similarity. The tendency which we thus note about us, may be divided into two groups, those which should be encouraged and those which should be discouraged. Among the latter is the tendency, in our trade perhaps worse than any other, to needless duplication and division of products, adverse always to the lowest cost and harmful to the trade, hindering its natural and normal growth, and the control of foreign markets. We note the tendency to a variety by division of product rather than by concentration. It is the truer law. We note again in one of the divisions of our business troubles arising because of the tendency in architecture to a laxity in specifying products which we make. Among the tendencies to be encouraged in our industry is that toward concentration of products, not by variety, but by aggregation. The tendency to fairer competition among manufacturers by better methods of specification on which competitions are based. A tendency which might wisely be encouraged here would be toward the system of having a class of experts known in England as "Quantity Surveyors," to make up a bill of quantities upon which shall be based all of the tenders of all the manufacturers or merchants who propose to furnish the materials. The tendency should be encouraged to an appreciation of identity of interests between the manufacturer and dealer and the fact that both would be benefited by fair prices. The tendency should be encouraged to appreciate better the value of foreign trade, and hence of foreign traders, and in this connection the importance of those who are coming here during the coming summer to visit the Columbian Exposition. Following among the tendencies to be encouraged is that of manufacturers and distributors to come together, as we meet here to-night, to fraternize and become acquainted and to form social relations, and especially to unite in holding the annual dinner of the Hardware Club of New York.

The Sixth Toast.

The president in introducing the next speaker, Richard R. Williams, the Hardware editor of *The Iron Age*, referred as follows to his connection with the Club:

Very little has been said to-night about the organization of the Hardware Club or the composition of it. That has fortunately been left in the hands of one of its most accomplished members. No one is better qualified to speak of the Hardware Club than the gentleman whose name is next upon the programme. From its inception he has been the most loyal of its friends and has contributed much of his time and ability to its success. In this Columbian year, which our Dinner Committe have celebrated in the colors adopted upon our badges it will be a matter of pleasure to all who have been connected with this club that they have had the association and help of Richard R. Williams. Those in the Board of Governors who have made his acquaintance have learned to esteem him highly, and lean very much on his wisdom and council. His affability has been equal to every occasion, as has also his courage and patience, and it is with great pleasure that I commit to him the agreeable task of responding for our Club.

In responding to the toast "Our Club," Mr. Williams said:

You have highly honored me in giving me this congenial and yet important toast. The task, however, as outlined by your president, is not a difficult one, and it certainly shall not be a long one, for the history of the Hardware Club is a very brief history. We all remember meeting here a year ago, a heterogeneous mass of Hardwaremen. We meet to-night an organized Hardware club. We have our constitution, which you know is the great thing, and our committees and our president. We have a definite plan, which is already being put into execution, and we have the members which warrant the undertaking of a large enter-

prise with the promise of its successful completion. We have also, as is evidenced to-night, enthusiasm and far-reaching plans, for the thought of the Hardware Club is that it shall be a new power in this city and this part of the country, which shall be felt in its effects all over our broad land. But, Mr. President, I will not attempt to trace the different steps by which this consummation has been reached. This occasion is a festive one. The Club, while it has business in it, has also very much of a fraternal and kindly spirit, and this is not the place to go into any long discussion.

After referring in a pleasant vein to some of the matters touched upon by other speakers and to the building in which the Hardware Club will have its home and the ways in which its work may be done, Mr. Williams turned from the business side of the organization to its social features and the opportunity it will give for acquaintance among the trade, incidentally referring to the Hon. John H. Graham, whose absence on account of illness was much regretted, as a representative merchant, closely identified with, manufacturing, in whose hands Hardware interests will be safe. Mr. Williams then continued:

It will be for the business advantage, I believe, of all the trades here represented to have this club in active operation, but it is not for that alone that it is organized. I speak now a single word concerning fraternity, and the satisfaction, the helpfulness and the uplifting that are to come from simply knowing one another better. I heard not long since of a Hardwareman in this city—many of you knew him, some intimately. He was a man who was loved with a tender love and honored with a sincere honor—a quiet, unobtrusive, upright, kindly man, who made a friend of every one who knew him. Not long since I heard a gentleman speak of him, referring to the time when he was a young man, and this merchant helped him by his advice and by financial aid—a better test of friendship—thus contributing largely to his success, and awakening very kindly feelings. I causally heard another person speak of this same man. When he came, as he termed it, a green boy from the country, this merchant in New York watched him, and seeing that he was not going quite right, placed his hand gently on his shoulder and gave him a paternal word of caution and advice—a word that told on that young man's life and made him, together with other influences co-working in the same direction, upright, earnest and enthusiastic in every good work. The more I know the trades represented here to-night the more I am convinced that there are in them multitudes of men whom it is a privilege to know. We hear of or meet one another in a business way. It is mechanical. There is a metallic ring in the intercourse. But wait a little. That man with whom you have corresponded for years you will find has sympathies the same as yourself—aye, and earnest aims and a true and tender heart, and if you can only get near him you are made to be a better and stronger man, your life is broadened and sweetened. It is for things like these that this club stands, and I speak just this one word for fraternity. "Good men and true" there are all about us. We might all be better than we are, truer than we are, but after all it is a privilege to be permitted to know one another. While we are men of iron there may be the pure gold of character, and in friendship and integrity we may be true as steel.

Trade Organizations.

Among the guests at the dinner was Charles E. Adams of Lowell, Mass., of the Massachusetts State Board of Trade, a gentleman who is active and influential in connection with trade organizations. Though not expecting to speak at the dinner, in response to an urgent request from the president, Mr. Adams made a brief and interesting address, the substance of which is given below.

When I was a resident of this city the Hardware fraternity had nothing in common excepting business relations. Now I find you gathered around the table carrying out the idea expressed in that Shakespearian quotation, "Do as adversaries in law, strive mightily, eat, drink and be friends." Every man, it seems to me, has his duty to perform in a community to promote its welfare, and it is for this purpose that associations are formed; and the Hardware fraternity, in addition to the social features of the Hardware Club, has another duty. One of the best speeches I have ever heard in my life I have listened to to-night, for it is a practical lesson, not only to every Hardware merchant, but to every merchant in this country. That was by the honorable gentleman who represents some district in Congress from the State of New York. It has been my privilege for the past two years as representing the Massachusetts State Board of Trade to present a few questions to the consideration of some of the members of Congress. One of these—the Torrey Bankruptcy bill—is one that I am sure you are all interested in, a measure that would insure an honest man some chance against those who live lives of ease and luxury at others' expense. A few days ago there was a failure in Massachusetts. The principal member of the firm was quite extravagant. He had his fast yachts and his fast horses, and luxuries that only the most wealthy could have. A meeting of the creditors was called. He gave in his statement, which showed the assets very small, liabilities very large and a corresponding slight dividend. The creditors murmured somewhat. "Well," he says, "if you are not satisfied with that you can make a division of my body among you." An old gentleman arose and said that he regretted to hear of the slight dividend, but if such a division was made as suggested he would like that part commonly known as the gall. Now, gentlemen, this Torrey Bankruptcy bill has been placed before Congress. It is what the business men of this country from Maine to California, through their business associations, have indicated that they want, or as near to it as could possibly be devised. The bill was got through committee. The result was that a day was assigned and one man defeated the will of the merchants of this country. What was the trouble? They say the rules. Who made the rules? It was not the merchants. The gentlemen to-night has told you there are too few merchants and too many professional men in the halls of legislation at Washington. Talking with a member of the legal fraternity who has had a large legal experience in Washington, he said: "I am satisfied from 12 years' experience at Washington that if the House of Representatives was composed of practical business men and the Senate of lawyers we should get a great deal better legislation than at the present time."

There is another thing presented to Congress in which the Hardware trade is particularly interested—that is, the consolidation of third and fourth class matter. Hardwaremen send many samples of

Table E

Biddle Hardware Co. Charles M. Biddle	1	2	Peck, Stow & Wilcox Co. Winfield D. Walkle
Peck, Stow & Wilcox Co. L. V. Walkley	3	4	Peck, Stow & Wilcox Co. Edwin M. Millard
Buehler, Bonbright & Co. James G. Bonbright	5	6	Carlin & Fulton Geo. L. Irwin
Peck, Stow & Wilcox Co. Mortlock Pettit	7	8	Biddle Purchasing Agency W. C. Biddle
Supplee Hardware Co. Jas. D. Green	9	10	Peck, Stow & Wilcox Co. S. Howard Wilcox
Peck, Stow & Wilcox Co. Joseph E. Rhodes	11	12	Peck, Stow & Wilcox Co. E. J. Neale
Southington Cutlery Co. John W. Gridley	13	14	The Metal Worker L. C. Dawes
Russell & Erwin Mfg. Co. G. J. Laighton	15	16	The Iron Age and The Metal Worker Thomas Atkinson
Russell & Erwin Mfg. Co. W. G. Smythe	17	18	The Iron Age F. E. Thompson
Russell & Erwin Mfg. Co. G. B. Germond	19	20	The Iron Age and The Metal Worker C. C. Taintor
Landers, Frary & Clark C. S. Landers	21	22	Landers, Frary & Clark F. Barker
Landers, Frary & Clark C. F. Smith	23	24	Landers, Frary & Clark C. W. Hackett
Landers, Frary & Clark G. J. Turnbull	25	26	Landers, Frary & Clark Edw. N. Stanley.
Landers, Frary & Clark G. M. Landers, Jr.	27	28	Landers, Frary & Clark C. L. R. Clark
Stanley Works W. F. Fuller	29	30	W. R. Grace & Co. P. La Coste
J. H. L. Todd & Co. J. H. L. Todd	31	32	J. H. L. Todd & Co. T. S. Todd
Stanley Works A. E. Duncan	33	34	Stanley Works A. J. Sloper
W. R. Grace & Co. D. L. Stevens	35	36	W. E. Peck
Stanley Works I. G. Lawrence	37	38	Stanley Works Geo. P. Hart.
Stanley Works L. H. Pease	39	40	Weed & Co. Hobart Weed
Stanley Works Hon. V. B. Chamberlain	41	42	Stanley Works A. Chamberlain
	43		

Stanley Works
Peter McCartee

goods through the mail and such matter now goes as fourth-class at 1 cent an ounce. The bill contemplates concentrating the two into 1 cent for 2 ounces. This would not be detrimental to the interests of the country from a financial standpoint. Two years ago I had the honor to be made the chairman of a committee of the National Paint and Oil Association to endeavor to present this matter to Congress and see if it could not be engineered through in some fair and honorable way. We obtained a hearing before the Senate and House Committee and we had bills upon both the Senate and House calendar last year, and this year, too. I have endeavored to see if some way could be devised to have that bill passed. But I was told that the rule prevented a consideration of it. In the Senate there is a Senatorial courtesy. The Senators, with one exception, are all in favor of the bill. We have had a unanimous report from the committee, but there is one Senator who objects to the bill. He does not tell the reasons for his objections. Senatorial courtesy prevents that bill from being put through. It seems to me that this club has a mission to perform, and that it is to do their utmost in having mercantile measures like this passed through Congress by Congressmen representing the different parties. You have an organization in this State, Mr. President, called the New York State Board of Trade. It seems to me that one of the first duties of this club, if it really wants to do active work, is to join that New York State Board of Trade and assist others in carrying out measures of such moment. I do not care to take up your time, and I thank you for having the opportunity of meeting the Hardware fraternity of New York, and congratulate them in the formation of this club, and I also congratulate the people of New York. Its power for good cannot be overestimated, and I also believe that it will engender a better quality of feeling.

There is a land where all are equal,
We are hurrying to it fast;
We shall meet upon the morrow
When the gates of death are past.
We shall stand before the judgment seat,
And meet our Master there,
To try the blocks we offer
By His unerring square.

Mr. Walkley's Poem.

The president introduced Webster R. Walkley in a few graceful remarks, in which he referred to the last dinner, when Mr. Walkley presided. Under the somewhat enigmatical title "Sketches" the following poem, which abounds in happy hits, was read by Mr. Walkley and greatly enjoyed by the company:

My theme is complex, a queer mixture of things,
A compound quite rare of which a Muse seldom sings.
How to fix it and mix it, and how best to serve it
To that body elect whom you know best deserve it
Is a difficult task at this stage of our meeting.
When wit has exploded, and the joy of your greeting
Has been dulled by much thinking and quite as much drinking—
While smoke is ascending the spirits keep sinking.

The tallest one, you know her name,
By daring deeds she won her fame;
A friend of truth in every age,
A guide to youth or wisest sage,

We saw approach; with lifted hand
She bade me come and join the band;
With parted lips in silver speech
She uttered truths that I would teach.

What is truth? Pray critic tell.
Canst thou weigh or measure well
This rarest gem in all the earth?
Dost thou know where it had birth?

If the truth thou wouldst seek,
Then thy lips the truth must speak;
If the truth thou wouldst know
Then the truth thy heart must show.

If the truth thou wouldst teach,
If some heart thou can'st to reach,
If thou wouldst lead some trusting youth,
Thou thyself must be the truth.

Hardware, Implements of Iron and Steel,
Like swords and plows, the first men feel,
When in some Moses' hand it falls
To avenge a wrong in Israel's hosts or Pharaoh's halls;
Or when it cuts some Gordian knot that binds
A man or race of men. Freed, each finds
How sharp the edge, how keen the blade.
Of what Damascan stuff 'twas made!
As mighty as the pen—one made of steel—
Which throbs with life as throbs a steamer's keel.
In what a forge, in what a heat, were wrought
These mighty engines of our modern thought!
Progress, born of each, will cease to live
When swords are sheathed and pens no impulse give,
Each a mighty lever to uplist a sinking world,
And from decaying bastions have freedom's flag unfurled.
The sword oft cuts a way through mountains of despair,
And oft it hangs suspended by a single thread or hair;
It reeks with blood; it cries aloud from every battle plain,
Yet by the sword the world has reaped great gain.
It has been drawn for tyrants and for the oppressed unsheathed;
It has fought for Slavery, yet has Liberty bequeathed.
From plain of Askelon to Richmond's bloody field
It ever struck for Freedom when yeoman's hand did wield.
The Plow, almost as old as Mother Earth,
In times of Tubal-cain had birth.
Perchance was used in Eden's bowers,
Where beauty blushed mid sweetest flowers.
The upturned soil rich harvests bears,
Alike the rich and poor its bounties share.
In every age, in almost every race,
The Plow and Sword have symboled wealth and grace.
The corn of Egypt and the grapes from Eschol's vines
Are offspring of the Plow, as diamonds are of mines
By some translator's fault, I ween,
Or by some Hebrew points unseen,
The names of the men in the Hardware trade
Who sold the tools when the Ark was made
Are not recorded in Holy Writ,
Though Hammer and Nails, the Axe and the Bit,
Plows and Swords, Anchors and Chain,
Iron, Copper and Gold, which to our art pertained,
You will certainly find if you diligently read
The Book of Books, to whose counsels give heed,
There are the three Georges, at Sargent's, I mean,
And Tommy sits near, with Ladd in between.
He figures the discounts, adds and subtracts,
And has published a book to exemplify facts.
The others can multiply and often divide
The large profits on Locks, and Coffins beside;
They deal in all tools like the Axe, Hatchet and Hammer,
But the Head of the firm knows most about grammar.

And now with my guide we will walk down the street
And tell you of friends who perchance we shall meet.
Here is Laighton, who sits in a soft cushioned chair,
His hands, like Lamartine's, thrust through his hair,
Evidently solving some intricate problem
Concerning his customers (not how to rob them)
Scanning hexameters, his learning doth shame us
"Tempora mutantur et nos illis mutamus,"
Which, by the way, is exemplified here,
If you will just watch, as our guests disappear.

Table F

The Iron Age and The Metal Worker John S. King	1	2	American Whip Co. W. J. Cassard
The Iron Age and The Metal Worker Thomas Hobson	3	4	American Whip Co. Ira Miller
H. B. Shattuck	5	6	The Iron Age
Hardware Board of Trade J. H. Goldey	7	8	The Iron Age and The Metal Worker Walter C. English
Kearney & Foot Co. J. D. Foot	9	10	Turner, Day & Woolworth Mfg. Co. W. E. McCullough
Eagle Lock Co. H. B. Plumb	11	12	Savannah S. S. Line Richard L. Walker
Eagle Lock Co. R. J. Plumb	13	14	Hammacher & Delius L. E. Delius
Plume & Atwood Mfg. Co.	15	16	W. H. Crossman & Bro. J. W. Smith
Plume & Atwood Mfg. Co.	17	18	Henry B. Newhall Co. H. B. Newhall
Plume & Atwood Mfg. Co. Albert E. Snow	19	20	William H. Haskell Co. D. A. Hunt
J. F. McCoy	21	22	C. E. Jennings & Co. F. B. Griffin
Metal A. O. Kittredge	23	24	Eagle File Co. W. K. Stansbury
Metal G. E. Bond	25	26	J. C. McCarty & Co. J. C. McCarty
J. C. McCarty & Co. W. H. Littell	27	28	J. C. McCarty & Co. T. P. Burke
Humason & Beckley Mfg. Co. V. P. Humason	29	30	Bridgeport Brass Co. C. X. Cordier
Stanley Rule and Level Co. F. H. Thompson	31	32	Meriden Cutlery Co.
Oliver Bros. Frank J. Oliver	33	34	Meriden Cutlery Co.
Oliver Bros. Thomas E. Oliver	35	36	Salem Wire Nail Co. H. A. Winship
W. H. Cole	37	38	Salem Wire Nail Company Frank Baackes
H. C. Marshall	39	40	Salem Wire Nail Co. G. H. Ismon
J. J. Tower	41	42	Sherman & Lyon Polhemus Lyon
	43		

Sherman & Lyon
A. G. Sherman

There is Smythe, so polite, and Germond, of great nerve,
Each vieing with each how best he may serve
The man who strays in to buy watches or clocks,
By changing his mind to want sheet metal Locks.
Men take no note of time, when in security they rest,
With these Locks upon the doors they dream of Araby, the blest.
The music of the tumblers as the key turns to and fro
Is sweeter than a chime of bells, ten thousand tell you so.

Clinch, a fine fellow, with Underhill near him,
Though the boys, it is said, most awfully fear him,
He has done what he could, and that as he would
To make this dinner the best—better than good,
Though the struggle be long,
In opposing the wrong,
After the night
Will surely come light,
And then the victor's song.

Peter McCartee, the pet of the street,
Always well dressed from his head to his feet;
A jolly good fellow, fair and square all around:
The most popular man in the trade to be found.

Have you heard of the firm, Smith, Bonsall & Field?
Sowing wide acres, expecting rich yield;
Selling Spades, Hoes and Rakes for planting the corn
To feed an on-coming race—children unborn.
Smith ever ready to bind up the sheaves:
The gleaners quite welcome to what Enterprise leaves.

American Brass and Lamp Co.	1	2	The Iron Age and The Metal Worker H. C. Mabie
American Brass and Lamp Co.	3	4	The Iron Age and The Metal Worker E. F. Ellert
Clinton Wire Cloth Co. Geo. E. Howard	5	6	Buckingham, Clark & Jackson W. S. Clark
F. Hallock & Co. F. W. Hallock	7	8	Buckingham, Clark & Jackson W. W. Buckingham
Buckingham, Clark & Jackson A. H. Jackson	9	10	John E. Bassett & Co. George J. Bassett
Bruce & Cook S. A. Jennings	11	12	Gilbert & Bennett Mfg. Co.
Bruce & Cook Frank Baldwin	13	14	Bruce & Cook S. G. Wickett
Bruce & Cook Frank C. Jennings	15	16	Bruce & Cook P. R. Jennings
Bruce & Cook J. C. Charlock	17	18	Anglo-American Iron and Metal Co. J. Friedenstein
Union Drawn Steel Co. Thomas Towne	19	20	Anglo-American Iron and Metal Co. Jarvis B. Brown
Metal C. S. Anderson	21	22	Anglo-American Iron and Metal Co. Frank A. Tupper
Metal W. E. Partridge	23	24	C. Driesbach's Sons J. O. Driesbach
Henry Elliot	25	26	Russell Jennings Mfg. Co. S. H. Jennings
A. Richards	27	28	Surpless, Dunn & Alder B. S. Alder
C. P. Sherwood	29	30	Alfred Field & Co. J. R. Linn
I. W. Stewart	31	32	Keystone Lock Works E. T. Fraim
Coldwell Lawn Mower Co. Thomas Coldwell	33	34	Reilly Bros & Raub H. L. Raub
J. W. Ealy	35	36	L. Kohns
Cooper, Hewitt & Co.	37	38	L. Kohns
Brent Good	39	40	Phœnix Lock Works H. S. Brooke
George Kissam	41	42	Simmons Hardware Co. J. E. Smith
	43		

Table G

Meriden Bronze Co.
W. E. Gard

With methods precise and a mechanic's devise he keeps everything in strict order.
When he rides in the car he ne'er smokes a cigar,
Though sometimes he thinks that he orter.

There are Charlie and Abe, the Quackenbush boys,
Sharers of sorrows, yet many more joys,
With a host of kind friends in country and town
Feeling quite sad that their sign is pulled down.
There is John Graham, 'tis a pleasure to show him,
Honorable John Graham, as now you must know him;
He has carved his own way from poverty up,
And sips sweetest nectar from the winner's gold cup.
Hurrah! for our Congressman, honest John Graham!
A man of the People, he ne'er will betray them;
Right shall be Might and his honor kept bright.

There are Sickels and Sweet, with a Lyon to eat,
Though Sickels has garnered rich harvests of wheat.
Like bees in their hives, these earnest lives—
Still looking and struggling for meat.

What's in a name? As cunning as a Fox.
The phrase is not mine. Who's in a box?

There was William the Conqueror, and William his son;
Their race, we all know, is not yet run
William the Kaiser, and William the Great,
William the Prince of the Netherland State.
This William of Orange was Liberty's son,
Great and as good as our own Washington.
The light of these lives illumes history's page,
Which will ever grow brighter as time gathers age.
Sweet Williams that blossom in colors most rare,
And the Williams who sits in the President's chair;
The Williams who crown this occasion with grace,
Who spend time and thought to better their race,
Whose figures and fancies impress every page
Of the paper they edit and call *The Iron Age*.

Here are Kittredge and Kennedy, editors too—
What a host of fine fellows all pass in review—
In the van of the battle upholding the right,
Defending the truth with their pens and their might!

Here are Biddle and Bonbright, Irvin and Green—
The rarest of gems are often unseen—
And keen-eyed Supplee watching his chance
To always get in before an advance.

Have you read of Jack Horner who sat in the corner?
The name of the author I'm sure I've forgotten,
But the Plumb he secured through ill has endured
And other Plumbs has begotten.
They're all right, they sit here to-night,
With Hammer and Sledge and Pick for a fight.

There are a lot of good fellows all up through the State
Whose virtues and follies we surely can mate,
McCarthy so gracious, and Walbridge so cool,
And Matthews, most learned in Nature's own school.

Everson and Kennedy, Hamilton and Weed,
Men of culture and thought, sowers of seed,
Reeping rich harvest which Enterprise yields
To the tillers and toilers in life's fertile fields.

Barker, broad and square shouldered, upright and tall,
I'll say if I may, "the noblest Roman of them all;"
Brave, honest and true, a man through and through,
Unyielding, unbending, refreshing as dew.

There are Hibbard and Bartlett, with Spencer away
In a land which is fairer and brighter than day,
While Dezendorf sits exhausting his wits
How to buy better than they.
Conover square and Warren as fair,
While others are blowing
They keep a growing—
Lyford and Charles are still there.

Horton and Gilmore, McWilliams and Black,
With steam always up they keep on the track,
Not whistling and puffing for a mile in a minute,
Though if the race be close they'll surely win it.

Markley and Alling, Scoville and Crane,
Traveling through valleys, o'er mountain and plain,
Selling Sickles and Scythes for the old reaper, Time—
Their lives, like a song, in sweet melody chime.

Here are Sanford and Harvey, and Morley himself,
As cunning as mice nibbling cheese on a shelf,
Selling Lumber and Salt, Harness and Nails,
Old oaken Buckets and Leather-bound Flails.

The names we have mentioned, you'll agree, are the least—
The unnoticed the best, like the wine at the feast.

We drink to our friend, William J. Coombs,
The weaver of thought in the mind's great looms;
A builder of State, where the People are King
And the songs of the nation with Liberty ring.

We drink to our guests from pulpit and press,
Who always are striving some wrong to redress;
Who stand with bows drawn, to shoot arrows of steel,
Yet ever found ready the wounded to heal.

We drink to that host, throughout our broad land,
Who toil with the brain or toil with the hand;
We welcome all climbers, and point to that hight
Which alone they can reach by the ladder of Right.

We drink to the men who sell Iron, Steel and Nails
To lay the broad tracks or fasten the rails;
Who play with the lightning or harness the steam,
And awaken the age from its long troubled dream.

While I speak, the night wears on;
The morning star and rising sun
Will soon denote the day's begun—
The Birthday of our Washington.

Patents.

At the conclusion of Mr. Walkley's poem, which was listened to with the closest attention, the president introduced Hon. Charles E. Mitchell, ex-Commissioner of Patents, who referred in a brief speech to the important part which the American patent system has had in the development of the country and its manufacturing interests.

I have often wondered why it is that on occasions like this no references are made to the patent system. Pardon me for referring to it for a moment as a source from which so much material progress springs. Did it ever occur to you—of course it did—that of all the causes to which the material progress of the day may be ascribed, there is one that came into being in modern times. Your commerce is of ancient date, your trade is of ancient date, your banking, manufacture, your tariffs, your free trade are all of ancient date. But 100 years ago there came into being in this country—and the second system of the world—the system of protecting inventions by letters patent. And that was the only cause that was not in existence at the time when modern progress dawned. There are men here who can recollect. I can almost do it myself, when the tallow dip or the pillion represented the day. The lightning express and telephone have developed, and can you ascribe it to any other cause than to the fact that 100 years ago there was an act passed which provided that the ingenuity of mankind should be protected? In the Constitution enacted at Philadelphia, after the adjustment of the rights of the States and of the powers of the House and Senate and Executive, just as they were about to finish their work, somebody suggested that they put in their Constitution a clause to protect inventions. If that clause had not been put in the Constitution, I verily believe there would not now be 44 States in one nation. For who can believe that if modern improvement and invention had not triumphed over distance and opened to us our country from California to the Alleghenies, that there would have been one nation for an entire continent? Those men builded wiser than they knew, and when they put in that little paragraph just as they closed their immortal work, they did not appreciate it, for the first patent act provided that three members of the Cabinet should constitute the bureau for granting a patent. The first patent was granted by Jefferson, Knox and Randolph, sitting as a committee, discussing whether to Samuel Hopkins there should be granted a patent for an improvement in manufacturing pot and pearl ashes. The patent system has wrought wonders. I wish to impress one thing upon this audience, and that is this: The time ought to come when the Commissioner of Patents will be a permanent officer with a tenure as secure as that of any. There is no reason why once in four years or oftener there should be a termination of his services, and he ought to have a salary sufficient to insure his remaining in his position, and among the tendencies of the time is the probability that that time will be reached when, under civil service reform, there will be a Commissioner of Patents who will have a permanent tenure and an adequate salary, and when that time comes there will be additional reasons for congratulating the members of the Hardware Club and all others interested in inventions. More progress has been made in the hundred years of the American patent system than from the time of Cæsar to the time when that system was perfected.

At the conclusion of Mr. Mitchell's remarks, which were appreciated by the company and heartily applauded, the president dismissed the assemblage by quoting the sentiment from Ben Jonson with which the toast list closes:

In the hope to meet
Shortly again and make our absence sweet.

Thus terminated a very enjoyable occasion, which will be recalled with pleasure by all who participated in it.

The New York State Association of Hardware Jobbers.

THIS ASSOCIATION met in this city February 20, at the Hotel Savoy, Fifth avenue and Fifty-ninth street, for the discussion of such matters as usually come before them. The object of the organization is to meet at least once a month in some city of the State for the purpose of comparing notes, exchanging views, &c. With the business for which they are met disposed of they always conclude with a dinner, this meeting which is said to have been the best they have had, being no exception. Dinner was served at 3.30 p.m. in one of the private dining rooms of the hotel, and for three hours strict attention was given to the *menu* and speeches. The guests of the occasion were George H. Sargent, George Hart and Peter McCartee of the Stanley Works: W. R. Walkley of Peck, Stow & Wilcox Company; W. A. Graham of John H. Graham & Co., and G. F. Wiepert, E. V. Bayard and R. R. Breese of Sargent & Co. The principal speeches were made by Robert McCarthy of Syracuse, and George Sargent, while most of the guests made more or less extended remarks.

Charles Tillinghast presided during the early portion of the dinner, but being compelled to leave before the speeches, James W. Eager of Syracuse ably filled his place, introducing the speakers.

Among the members present were noticed Frederick Barker of Barker, Rose & Gray, Hobart Weed of Weed & Co., Henry Kennedy of Bradford, Kennedy & Co., J. W. Black of Burhans & Black, Charles Turner of the Albany Hardware & Iron Company, S. J. Weaver and G. D. Palmer of Weaver, Palmer & Richmond, E. B. Everson of Everson & Co., Jas. W. Eager, Charles Tillinghast of J. M. Warren & Co., and Mr. Murray of Charles Millar & Son.

Officers of the Hardware Club.

WE GIVE on an accompanying page portraits of the officers of the Hardware Club of New York. These gentlemen are as as follows: William H. Williams, president; R. H. Swayze, vice-president; Thomas F. Keating, treasurer; and J. L. Varick, secretary. The gentlemen mentioned were very active in organizing the Club, and we take pleasure in giving below sketches of their business careers, which will doubtless be of interest to the trade:

WILLIAM HILTON WILLIAMS.

William Hilton Williams was born in Schoharie County, N. Y., November 7, 1847, of New England parentage, being descended in the ninth generation from Robert Williams of Norwich, England, who settled in Roxbury, Mass., in 1638. Mr. Williams came alone to New York in quest of fortune in March, 1862, and found employment with Brooks Brothers, clothiers, of Catharine street, and was in the store when it was sacked by rioters in July, 1863, and did military duty during all that turbulent week. In 1865 he entered the Cutlery and Commission Hardware house of Clement, Hawkes & Maynard, at 14 Beekman street, and subsequently entered the employ of J. Russell & Co. In 1871 Mr. Williams formed a partnership with Cornelius S. Van Wagoner, with whom he has ever since been associated in the manufacture of Hardware. The two are brothers-in-law, having married daughters of Edward E. Bowen, an old and highly respected merchant of New York and resident of Brooklyn. The business of Van Wagoner & Williams was conducted for many years at 82 Beekman street, New York, but in 1892 the firm (which had been recently incorporated) removed their factories to Cleveland, Ohio, retaining New York headquarters at 14 Warren street. Mr. Williams is well known to the wholesale Hardware trade of the East and West, having traveled extensively in the prosecution of his business for many years. He resides on Prospect Heights, Brooklyn, and has a summer home at Woodstock, Conn., where his ancesters came from.

Mr. Williams has been somewhat actively identified with the social and political life of Brooklyn for 20 years. He was elected president of the Brooklyn Young Republican Club during the memorable Blaine campaign of 1884, and held that office until after Mr. Harrison's election, has been several times tendered the Republican nomination for Mayor of Brooklyn, and Mayor Chapin wished to appoint him one of the Civil Service Commission, but he has always declined political office. He was a delegate to the Republican State Convention of 1891, where he nominated General Woodford for Governor, and was chairman of the Executive Committee of the State League of Republican Clubs in 1888.

Mr. Williams is president of the Brooklyn Choral Society and corresponding secretary and a director of the New England Society. He is a member of the Young Republican, Montauk, Hamilton and Union League clubs of Brooklyn, and is also connected with other social, military and business organizations.

Despite his activity in social and political organizations Mr. Williams is a careful, energetic and exact business man, and few men are more diligent in the attention given to their business.

ROBERT H. SWAYZE.

Robert H. Swayze, the club's vice-president, is the secretary of the Plume & Atwood Mfg. Company, a representative concern in the manufacture of Brass and Copper goods. He has been associated with this company since 1885, and is now in charge of the business in this city. Mr. Swayze has given much time and effort in the way of promoting the interests of the club and is a valuable acquisition to its roll of members.

THOMAS F. KEATING.

Thomas F. Keating was born in Pittsburgh in 1845, his parents having been among the early settlers in that city Mr. Keating attended school until he was 16 years old, when he went to work for the firm of John Dunlap & Co, manu-

facturers of Stamped and Japanned Tinware, in that city. His first work was on a screw press, edging fruit can tops and bottoms at one cent per gross. Mr. Keating was subsequently graduated to the store, where he was made successively packer, porter and assistant shipping clerk. Four years were thus spent and he made the acquaintance of the Messrs. Yale, as the lock factory was then located at that place. He spent two and a half years with Mr. Farren, and in 1869, entered the employ of the Yale Lock Mfg. Company, their New York office being at that time at 1 Barclay street, as their traveling salesman. His first sale of a Yale Lock was to Jos. Woodwell & Co. of Pittsburgh. The territory he covered embraced the United States and Canada, and his trip usually occupied the entire year. With the exception of about six months when he was in Boston handling the Time Lock trade, Mr. Keating spent nine years on the road. In 1878 he assumed the management of the Company's New York office at 53 Chambers street, and in 1880 he became a stockholder and director in the company. Mr. Keating is at present assistant treasurer of the company and manager of its New York warehouse, which is now at 84 and 86 Chambers street. Mr. Keating is married and has two children. He resides at 317 West Twenty-third street.

The Officers of the Hardware Club of New York.

J. LEONARD VARICK.

J. Leonard Varick, the secretary of the Hardware Club, who has done yeoman service throughout the various stages of its organization and incorporation, was born in Poughkeepsie, N. Y. Graduating

from Yale College, Class of '68, he connected himself with the Union Nut Company in New York in March of the following year, and has been with the company ever since, now filling the position of assistant treasurer. Besides being a director of the Miller's Falls Company he is identified with the following social organizations, viz.: The University Club, Colonial Club, Yale Alumni Association of this city and the Holland Society of New York.

On What Basis Shall Cut Nails be Sold?

IN THE PRESENT confused condition of the Cut Nail market Nails are sold on three different systems. First the old Cut Nail card. Then at their meeting January 31, the Eastern Nail manufacturers adopted the National Price-List, which, however, has not come into general use. Again, at Pittsburgh February 15, at a meeting composed principally of the Western Nail manufacturers the Wire Nail card was adopted for the sale of Cut Nails, when the following resolution was passed:

Resolved, That the Wire Nail schedule of extras be adopted by the Cut Nail manufacturers and that such a card be issued immediately, and that each manufacturer of Cut Nails pledge himself and his company that he will not quote nor will he permit any quotations to be made for his account on any basis of average.

The fact that the Western makers have not regarded the National Price-List for Cut Nails with favor practically disposes of it for the present at least, and the action of the Eastern mills in following the Western mills in the adoption of the Wire Nail card, as is referred to under Notes on Prices, leaves the Wire Nail card, for the present, at least, as the basis for business in this line.

While there is a good deal of difference of opinion among the manufacturers of Cut Nails in regard to the proper basis for their sale, there is a general desire on the part of the trade to have some method adopted which will simplify matters, and if possible dispense with the troublesome though time-honored system of averages. The Cut Nail manufacturers are desirous, as far as possible, to meet the views of the trade in this regard, hoping that thereby the sale of Cut Nails will be promoted and the tendency toward the use of Wire Nails checked. At the same time they are naturally desirous of having some method by which they will be aided in obtaining a better price for Nails, it being conceded that for some time the sale of Nails has been attended with little, if any, profit, and in many cases with absolute loss.

In order to show the difference between the three methods of selling Cut Nails which are now before the trade, we give below the cost of an assorted carload, estimated in the three methods. The following is the cost of an assortment of 250 kegs on the old Cut Nail card at $1.40 basis, f.o.b. mill, with a 35 cent average:

3d Fine,	10 kegs	$1.50 extra		$15.00
4d Flat,	5 "	.60		3.00
4d Common,	5 "	.60		3.00
5d "	5 "	.60		3.00
6d "	25 "	.40		10.00
8d "	60 "	.25		15.00
10d "	70 "	.20		14.00
12d "	30 "	.15		4.50
20d "	10 "	.15		1.50
40d "	5 "	.05		.25
8d Finishing,	10 "	1.60		10.00
10d "	10 "	.85		8.50
60d Common,	5 "	....		....
	250 "	at 1.40 basis		350.00
				$437.75

The following is the cost of the same assortment purchased at a discount of $1.25 from list, January 31, 1893, f.o.b. mill:

3d Fine,	10 kegs	$4.00	$40.00
4d Flat,	5 "	3.35	16.75
4d Common,	5 "	3.35	16.75
5d "	5 "	3.35	16.75
6d "	25 "	3.20	80.00
8d "	60 "	3.10	186.00
10d "	70 "	3.00	210.00
12d "	30 "	3.00	90.00
20d "	10 "	3.00	30.00
40d "	5 "	3.00	15.00
8d Finishing,	10 "	3.20	32.00
10d "	10 "	3.10	31.00
60d Common,	5 "	3.00	15.00
	250		$779.25
250 kegs at $1.25 per keg			312.50
			$466.75

The following is the cost of the same assortment sold on the Wire Nail card at a base price of $1.25:

3d Fine,	10 Kegs	$1.60 extra		$16.00
4d Flat,	5 "	.90		4.50
4d Common,	5 "	.90		4.50
5d "	5 "	.90		4.50
6d "	25 "	.75		18.75
8d "	60 "	.60		36.00
10d "	70 "	.50		35.00
12d "	30 "	.45		13.50
20d "	10 "	.35		3.50
40d "	5 "	.25		1.25
8d Finishing,	10 "	.90		9.00
10d "	10 "	.75		7.50
60d Common	5 "	....		....
	250 "	at $1.25 basis,		$312.50
				$466.50

It will thus be seen that this lot of Nails costs approximately the same amount in the three different methods, the cost being as follows, in each case:

At the old Cut Nail card, $1.40 basis, 35 cent average	$437.75
At National Cut Nail Price-list at a discount of $1.25	466.75
At the Wire Nail card, $1.25 base	466.50

WHAT MANUFACTURERS SAY.

Laughlin Nail Company, Wheeling, W. Va., who, we are advised, took an active part in securing the adoption of the Wire Nail list by the Western manufacturers, have already issued a card, which is substantially the Wire Nail card, and which they designate as the National Steel Cut Nail Schedule. They advise us that they have had a number of very favorable comments on this change and believe that it will be found satisfactory to both the buyer and seller, and that it will accomplish the purpose aimed at—*i.e.*, the doing away forever of selling Nails based on averages.

La Belle Iron Works, Wheeling, W. Va., issue a circular dated February 16, in which they refer to the adoption by the manufacturers of the two widely different methods of quoting Nails, as follows:

The adoption of a card by the Eastern Cut Nail association on January 31, and a different card by some of the members of the same association and by the Western Cut Nail manufacturers within two weeks from that time may seem strange. The first card referred to was not satisfactory to the majority of the Western Cut Nail manufacturers. After canvassing the situation very carefully it was decided that it would be more satisfactory to the buyers of Nails if the Schedule of extras on Cut and Wire Nails be made the same, hence in comparing the cost of the two Nails it would only be necessary to compare the quotations on the base price.

They also make the following remarks concerning the new schedule:

In accordance with the spirit of the resolution adopted at Pittsburgh on the 15th inst., future quotations made by this company will be made at a straight base price with the single condition that the quotation is made for ordinary assorted specifications. We sincerely hope that the new schedule may be satisfactory to the trade, and would request that each buyer of Nails assist the manufacturers in keeping the resolution referred to above, by refusing to buy Nails from any mill which may quote a price conditional on the specifications averaging a certain amount above base.

It will be observed that an important part of the plan adopted by the meeting at Pittsburgh is the agreement on the part of those adopting the Wire Nail list that no quotations should be made or permitted to be made on any basis of average—a matter to which reference is made in some of the letters printed below from representative Hardware merchants. In order to show how the matter is regarded by other Nail manufacturers we give below extracts from letters recently received.

We were a party to the adoption of the new card for Cut Nails, and fully believe that the action was the best that Cut Nail manufacturers have taken for many a day. It is proposed to dispense with the figuring of averages in an assortment of Nails, which would be a very desirable feature to the trade in general, as well as the manufacturers themselves. It will also result in placing in the hands of the trade but one list of extras or advances above base price, which will certainly be a very desirable feature. Many of the large dealers whom we have consulted upon this subject, both since and prior to the meeting referred to, are very much in favor of the adoption of that schedule, and have no doubt but that it will meet the hearty approval of the entire trade. The low base price in connection with the card for Cut Nails, taken in connection with the results of the recent tests made by the United States Government, will certainly have a tendency to restore Cut Nails to the position which they enjoyed some years ago. In other words, we think the tendency to adopt the Wire Nail will be checked, and not only reserve to Cut Nail men their present share of the business, but will also increase it largely.

We think the Pittsburgh action hasty and inconsiderate, and that the price-list and discount sheet adopted at the Philadelphia meeting should have had a fair trial, at least, and especially as it was approved at a meeting of all the Eastern makers and a personal and letter representation from the West, after ample

notice had been given them and invitations extended. Our trade seemed pleased with the new card or price-list, and we do not think they will approve of the Pittsburgh action, and we certainly do not.

We firmly believe that the adoption of the Wire Nail schedule of extras will be more satisfactory to the trade than the way Cut Nails have been sold the past few years, when both the manufacturer and merchant had to figure the averages on every sale made. We can only hope the action of the Pittsburgh meeting will meet with the approval of the trade. We are sure it is an improvement on the old card and better than the one made at Philadelphia on January 31.

We think the adoption of the Wire Nail card by the Cut Nail manufacturers would meet with general approval by the trade, but do not think it will benefit the manufacturers any, on account of the provision made in regard to figuring averages. This not allowed will give the jobbers a chance to divide their orders by giving the large Nails to one mill and small ones to another, which will not leave much of a margin for the one who furnishes the large Nails. We think the card adopted January 31 by the Eastern manufacturers a good one.

We are not a party to any action in regard to the prices of Cut Nails, and in fact are doing so little in that line that it is not a matter of much interest to us. If they have had a meeting to advance prices we may look for the usual result of still lower quotations.

WHAT MERCHANTS SAY.

In order to ascertain the views of the trade on this question we have addressed inquiries to some representative houses, both jobbers and retailers, asking their opinion of the action of the Pittsburgh meeting in adopting the Wire Nail card, with a proviso that no quotations should be made on any basis of average. From the letters received we make the following extracts, which represent the views of prominent houses:

We are of the impression that the adoption of the Wire Nail list will greatly simplify matters and be preferable to the last price-list and objectionable discount clause adopted by the Eastern Cut Nail manufacturers.

Our judgment is that the Cut Nail men will be unable to carry out that part of the agreement relating to making no prices on a basis of averages. Some one will break it in less than ten days, and then the whole fabric is gone. If it could be sacredly kept we are sure the jobbers would heartily approve it.

It is too early yet to form an opinion of the method of quoting Cut Nails by the Wire Nail card. The card adopted by the Eastern association is opposed very strongly by the retail dealers.

We think that the Cut Nail makers have acted wisely in adopting the Wire Nail card of extras, as by this action the difference in price between Cut and Wire Nails is clearly defined. Under the so-called National card adopted at Philadelphia some sizes of Wire Nails are actually cheaper than the same size of Cut Nails, which would be rather an abnormal state of things.

We should say that the action of the Cut Nail manufacturers in adopting the Wire Nail card and doing away with quotations on basis of averages would suit the trade at large. The number of lists, discounts and schedules of prices with which a salesman must be on familiar terms is so large that any movement to consolidate or simplify them is a step in the right direction. If the Nail card could now be changed so as to include all sizes, from 10d. to 60d., at a base price, it would be another progressive step.

We scarcely like to express an opinion as to the new move of the Cut Nail men, so many of their efforts being total failures. The facts are, that so far as the jobbers are concerned there is so little profit in selling Nails that it does not make much difference on what basis they are sold. We would be quite as well satisfied with the latest plan suggested as any other.

We do not see any advantage in adopting this new list (National) or any other one unless the advances are based upon the actual cost of production of the various sizes.

It seems to us that this action must simplify the Nail business. There is no reason why the extras on Wire and Cut Nails should be different. We will be glad if this action can be maintained.

We are not much interested in the schedule of prices for Cut Nails, as we discontinued the sale of that kind of Nail six months ago. Our principal reason for dropping them was on account of the necessity for making high averages in our specifications in order that we might get a price by which we might sell the goods. Our customers, however, insisted upon being served with the Nails as they wanted them, and they felt injured if they could not get bottom prices. If the new Nail list succeeds in removing the matter of high average of specifications, we think it will be a decided improvement and a great help to the Cut Nail business.

We believe the National Price-List for Cut Nails preferable to the old card, as in our judgment it would necessitate a return to the method of selling Nails at a stated rate, without taking the question of average into consideration—"a consummation devoutly to be wished" by a suffering Hardware public.

It will be a decided advantage to the trade in this part of the country where both Eastern and Western Nails are sold to have a uniform card, but as to any manufacturer agreeing not to make a difference in price for Nails with large averages for extras, we think this is out of the regular course of nature, as such orders would be much more tempting and lead to better terms.

The meeting of the Cut Nail manufacturers held in this city on the 15th inst. adopted the Wire Nail card, and it was also agreed to not permit in the future any quotations on a basis of average above base. Regarding our opinion of the movement, we believe, inasmuch as the decline of interest in Cut Nails on the part of the dealer was largely due to the annoying and unsatisfactory system of figuring on averages above base, the success of the new card will almost entirely depend upon the faithful observance by the manufacturers of the clause which prevents them from making quotations on any basis of average. If this feature is strictly adhered to, we incline to the opinion that much of the lost ground can be reclaimed.

As dealers we deem it an advantage to have one card applying to both kinds of Nails, and while we understand that on a basis of relative cost Cut Nail makers can afford to make the lowest base price, this feature we think would work to their advantage.

We shall watch closely the new order of things, and await the result with much interest.

Export Notes.

EDMUND SHAW, United States Consul at Asuncion, Paraguay, in a recent report says the new United States tariff has had no effect on that country as yet, as very little is imported direct from this country, there being no direct communication. All goods are bought through houses in Montevideo and Buenos Ayres. In his opinion Paraguay needs a sample house where American goods can be displayed and ordered through one large shipping firm. He observes that goods from the United States far excel the English, French and German, and, as a rule, have a ready sale over those of Europe, but the credits abroad are from three to six months, while this country offers less.

The Whitman & Barnes Mfg. Company, supplementing the foreign office opened at 149 Queen Victoria street, London, England, some months ago, in charge of Roland R. Dennis, have recently established another branch in Paris. These depots will handle the full line made by this company, among which may be mentioned specialties relating to Agricultural Implements, Automatic Small Power High-Speed Engines and Boilers, Twist Drills, Spring Cotters, Wrenches, Drop and Bicycle Forgings, &c. It may be of interest to know that the contracts for some time pending relating to the acquisition of real estate at West Pullman, Chicago, were signed by representatives of the company February 16. They have secured 19 acres, on which will be erected a large plant, in which various goods will be manufactured, those decided on at present being Mowing Machine Knives. This is in addition to their factories now at Akron and Canton, Ohio; Syracuse, N. Y.; and St. Catharines Ontario. They now have also stores and warehouses at New York, Boston, Philadelphia, Cincinnati, Chicago, Kansas City and San Francisco.

The United States Consul at Callao, Peru, A. J. Daugherty, reports that most of the American dealers at that place look

unfavorably on the project of increasing trade through the medium of the commercial traveler, on various grounds. Some think that if American manufacturers and producers would combine and establish a wholesale deposit in Lima, with goods at prices sufficient to cover expenses, the result would be advantageous. Others take an opposite view, believing this would result in injury to their own trade and be unfair to competing houses at home, who would not be in the combination. The consul's opinion is that there is no objection to the plan that might not be overcome to the entire satisfaction of the trade there, and the American houses can safely be left to look after their own interests. The combined houses will find no difficulty, in his opinion, in making such arrangements with American houses there as will avoid injury to any interests they now represent, and when the work of introducing American goods has been accomplished and the lines that can successfully compete are discovered, the deposit may safely give way to a division of the business thus established among the several American houses, according to such arrangements as the members of the combination may determine on. The main thing is to have goods there on exhibition and sale as well, in the charge of men who have the time and capacity for the work of introduction. A suggestion of his is that, in aid of the initiatory work to be done, the merchants of the whole coast and all trade centers in Peru could be brought to Lima as guests of the combination, at a cost not greater than now borne by some New York houses singly in giving to Western merchants free passage from and to their homes for the purpose of getting their orders.

Trade Items.

THE AMERICAN BIT-BRACE & TOOL COMPANY, 122-126 Washington street, Buffalo, N. Y., send a card to the trade stating that their numbers are the same as the American Bit-Brace Company's were; the two first numbers indicating the style of brace, and the two second the size. As example, 1810 is their No. 18, 10-inch; and 2208 is their No. 22, 8 inch. In their advertisement in this issue they give illustrations of their Braces and the new Ratchet Ring, and state that with these Braces a firm grip can be secured with even grease, sweat or gloves on the hands.

WE ARE ADVISED by the Pullman Sash Balance Company, Rochester, N. Y., that objection by merchants in various parts of the country to their Sash Balances are being removed, and that the Balances are being carried in stock more generally, and are giving satisfaction in use.

THE HARDWARE BUSINESS of Sedberry Bros., Marshall, Texas, was dissolved on February 1. J. M. Sedberry, on account of feeble health, has sold his half-interest to Jno. D. Heard of Marshall, and the business will be continued under the style of Sedberry & Heard.

THE HARRIS-DILLARD HARDWARE COMPANY of Blackstone, Va., will open, April 1, as successors to R. M. Anderson & Son of Petersburg, Va., a branch house, under the management of C. A. Epes, late of Munfordville, Ky. The Petersburg house will not carry Shelf Hardware, but will carry Agricultural Implements, Machinery, Vehicles and Harness. The capital stock of the company will be increased to $30,000, paid up. The Blackstone house will continue under the present management and carry the same line as formerly. The Harris-Dillard Hardware Company were established in 1880 and were incorporated in 1891. Their officers are as follows: J. M. Harris, president; R. F. Dillard, secretary and treasurer; and P. E. Harris, vice-president.

THE NEW WORKS of the Mann Edge Tool Company, Lewistown, Pa., turned out their first completely finished axe a week or so ago. The buildings are brick stuctures, large and substantial, in the construction of which special care has been taken to insure the health and comfort of the workmen. The works are fitted with modern machinery, and are run wholly by water power. When fully equipped and manned the works can be run to a capacity of 1000 axes per day, and will furnish employment to upward of 100 workmen.

NO. 4 OF THE IDEAL HAND BOOKS of useful information for shooters, issued by the Ideal Mfg. Company, New Haven, Conn., contains much information of interest to sportsmen, and many of the requirements to be followed out to insure success in reloading ammunition. This matter is presented in an attractive form by J. H. Barlow, who is known in military circles. The Ideal table of grooved and round Bullets; things worth remembering; twist of rifling in rifle barrels as made by the various arms companies; poetical sayings on the Ideal, &c., together with cuts and prices of Ideal goods, complete the book.

THE LINE OF GOLIATH TOOLS, an illustration of one style of which appears in their advertisement in this issue, include Nippers for cutting iron wire up to $\frac{5}{16}$-inch, and copper wire up to $\frac{3}{8}$-inch, also Tinners' Snips for sheet iron, Tinners' Snips with very long blades for light tin, Pruning and other Shears with drawing cut. It is stated that these goods are constructed on new and improved principles, and that they are of the best quality. The point is made that they possess great power of cut by means of the lever and the pulling motion of the upper blades. The United States patents covering the tools are offered for sale, or a proposition for their manufacture on royalty will be considered.

ANNOUNCEMENT IS MADE that the Upson, Walton Company, 155 to 163 River street, Cleveland, Ohio, have been incorporated under the laws of that State. It is also stated that the firms of Upson, Walton & Co. and J. W. Grover & Son have transferred to the new corporation their goods, real estate and good will. The members of each will be stockholders in the new company.

JOHN DORSEY has retired from the Hardware firm of C. A. Tanner & Co., Oswego, N. Y. Mr. Dorsey will open a new store, where he will carry on a similar business in his own name.

SWEATT MFG. COMPANY, Minneapolis, Minn., have appointed J. C. McCarty & Co., 97 Chambers street, New York, direct representatives for the sale of their Wheelbarrows, &c.

RYAN & MERRILL are a representative Hardware concern of Miles City, Mont., with traveling salesman on the road the entire year. They do a large jobbing business, and are state agents for Buckeye Machinery. Among recent purchases was ten carloads of Barb Wire. Both of the firm are young men, and have associated with them as buyer E. B. Babock of Iowa.

AZRO A. COBURN succeeds George W. Collins, who resigned on account of poor health, as treasurer and general manager of the Coburn Trolley Track Company, Holyoke, Mass.

IT IS ANNOUNCED that the Stuart-Peterson Company, who recently sold their property on Noble street, Philadelphia, Pa., to Hoopes & Townsend, have purchased the large brick building of the National Bureau of Engraving Company, Burlington, N. J., and will remove their plant there in a few weeks. The building is now being put in readiness. The company, it is stated, will continue the manufacture of Hollow Ware and Porcelain-Lined Goods, employing about 150 hands.

H. R. IVES & CO., Montreal, will run their Longueuil works for the coming season mainly upon staple lines of Hardware, and state that their stock will be kept well assorted. Their special lines, such as Pott's Irons, Iron and Brass Bedsteads, Iron Railings and Crestings, Hot-Water Heaters, Soil Pipe, &c., will receive particular attention.

UNDER DATE FEBRUARY 15 the Iron Clad Mfg. Company, 22-24 Cliff street, New York, announce in a circular letter to the trade that they have commenced suit against the Haberman Mfg. Company for infringement of letters patent No. 296,206 of April 1, 1884, and No. 386,023 of July 10, 1888. The trial of this suit is to determine the questions of validity of the Iron Clad Mfg. Company's patents, and infringement by the Haberman Company.

THE STANDARD FIBER WARE COMPANY, Mankato, Minn., favor us with specimens of the wall calendars which they are distributing. These are composed of large cards, on the margins of which are printed numerous cuts of the company's specialties, making a very attractive border. The upper portion of the center of one of the cards presents a copy of Gerome's picture, "Last Prayer of the Martyrs." Another shows Herring's, "A Winter Farm Yard." Leaves for each month are attached to the lower part of the cards.

BLISS, BULLARD & GORMLEY, the prominent Builders' Hardware merchants, 76 and 77 Randolph street, Chicago, have changed their name to Bullard & Gormley Company. Mr. Bliss retired from the firm some months since, as was announced at the time in these columns.

GIBBS MFG. COMPANY, Canton, Ohio, advise us that they are very busy, and that notwithstanding increased facilities in their new factory they are pushed to the utmost capacity. They are, however, considerably ahead on orders as compared with the corresponding time last year.

AT THE ANNUAL MEETING of the stockholders of the Morris Hardware Company, held in Youngstown, Ohio, last week the following board of directors was elected: H. M. Gerlick, J. H. Morris, W. J. Hitchcock, J. L. Botsford, W. J. Whitworth, L. E. Cochran and Hugh B. Wick. The directors organized by electing H. M. Garlick president, W. J. Hitchcock vice-president, J. H. Morris, general manager, and W. J. Whitworth secretary and treasurer.

THE NUBIAN IRON ENAMEL COMPANY'S Works, at Cragin, Ill., were destroyed by fire on the 17th inst. The fire was discovered in the vat room at noon, and the Chicago fire department was immediately notified, but the icy condition of the streets and a blinding snow storm caused considerable delay in the arrival of the engines, and the works were completely destroyed. The loss on buildings and stock is stated to be fully covered by insurance. The manager, Charles E. Bonnell, is noted for his energy and enterprise, and it is not likely that he will suffer much time to elapse until manufacturing operations are resumed.

THE GOSHEN SWEEPER COMPANY of Grand Rapids, Mich., report having had a successful year in 1892, and are prepared to do a much larger business in 1893, having added materially to their machinery and other necessary fixtures. They, like some other manufacturers, are dissatisfied with the space allotted them at the World's Columbian Exhibition, claiming to have put in an application for 400 feet and being awarded but 48 feet of space. Other manufacturers of Carpet Sweepers

have secured 80 feet, and the Goshen Company have concluded that unless they can have the same opportunity as their competitors they will save the money which will be required to make a creditable showing. They are still in hopes to have their space increased, as a number of applicants among their neighbors have concluded not to use the space awarded them. The number of improvements made in Carpet Sweepers by the Goshen Company within the past year have made them very popular with users, and they now receive a large quantity of orders by mail, whereas, when they first began manufacturing them at Grand Rapids, their business was entirely done by salesmen. They now have six representatives traveling from the home office, with selling agents in New York, Boston and Philadelphia, and expect to open an office and carry a stock in New York City at an early date.

Excess Baggage.

WE ARE ADVISED by C. E. Hobbs, treasurer of the Cape Cod Commercial Travelers' Association, that in answer to an appeal made by the excess baggage committee of this association, the New England passenger agents have recently promulgated a new excess tariff rate on baggage, making a net reduction of 25 per cent. This action on the part of passenger agents will, it is remarked, prove a great source of benefit to the railroads of that section, as well as to the large number of commercial travelers who frequent New England territory.

Bicycles.

IN ADDITION to those who have been referred to in the series of Bicycle articles, George R. Bidwell Cycle Company, 306–310 West Fifty-ninth street, New York, are including among their '93 patterns, a new ladies' wheel, which they have not heretofore made. Their full line embraces the Tourist Roadster, weighing, all on, 40 pounds; the Tourist Light Roadster, weight, 34 pounds, stripped; and the Ladies' Tourist, weight, 40 pounds. Their catalogue shows the wheels, and a line of cycling accessories. Their A B C of the '93 pattern Bidwell pneumatic tires, manufactured by this company, shows the special constructive tube, which is referred to as a new departure in the art of tire building. A special catalogue shows the product of the St. Nicholas Mfg. Company, of which they have secured control for the entire East. The wheels illustrated are the Varsity, Ladies' Varsity, Oxford, Peerless, Youth's Scorcher, Girl's Electric, Boy's Scorcher, Electric, Juvenile Electric and Cripper Tricycle. Geo. R. Bidwell Cycle Company have closed out their retail business in this city, that they may give sole attention to their wholesale Bicycle and Tire business. The Western Wheel Works, Chicago, Ill., issue a '93 catalogue, giving illustrations of 1893 wheels, including Blackhawk light roadster; Crescent, Nos. 2 and 1; Escort, Nos. 2 and 1; Juno, Nos. 2 and 1; Rob Roy, Nos. 4, 3, 2 and 1; Combination Junior, Nos. 4, 3, 2 and 1; Cinch, Nos. 2 and 1; Boys' Junior and Pet. Component parts of machines are given, with numbers and prices, to facilitate ordering parts. Valuable suggestions are given for the care of bicycles. Their bicycles are warranted perfect mechanically. The Western Wheel Works Pneumatic Tires are referred to as resilient and hard to puncture, and are guaranteed perfect in material and workmanship. The tire is described as having an outer casing of fine Para rubber and a fabric of special quality and weave, with an air tube of pure rubber free from flaws.

Price-Lists, Circulars, &c.

FARWELL, OZMUN, KIRK & CO., St. Paul, Minn.: Spring circular and Baby Carriages. The line shown in the circular includes Jackson Farming Tools, Gilt Edge Scythes, Seymour Snaths, G E Lawn Mowers, Columbus Scrapers, Toledo Wheelbarrows, Woodbury Whips, Arcade Spring Hinges, Hurd Refrigerators, White Mountain Ice Cream Freezers and Favorite Barrel Churns. Their entire line of Baby Carriages is manufactured in St. Paul expressly for them; the quality and finish of these goods are referred to as equal to any similar line manufactured.

BIDDLE HARDWARE COMPANY, Philadelphia, Pa.: Locks only. An illustrated catalogue devoted to Locks and Lock Hardware, shows Rim Locks and Latches, Night Latches, Mortise Locks and Latches, Front-Door Sets, Knobs, Sliding-Door Locks, Rose and Escutcheons combined, Push Buttons, Box and Chest Locks, Pad Locks, Butts, Sliding-Door Hangers, &c. The book contains 128 pages, bound in stiff cloth covers, and includes only such Locks and Lock Hardware as they keep in stock, that customers may depend upon having orders promptly filled. Prices on Building Hardware, Mechanics' Tools, Agricultural Implements, Cutlery, House-Furnishing Goods, &c, will be quoted upon application.

THE HORTON MFG. COMPANY, Bristol, Conn.: Bristol Steel Fishing Rods. An attractive catalogue describes, with prices, steel Bass Rods and Fly Rods; also gives prices of separate parts. The Rods are made both jointed and to telescope. For the coming season it is the intention of the manufacturers to produce a Rod which will be a great improvement over their past productions. An automatic Fishing Line Float is also shown, which in reeling is released from attachment to the line as soon as the float comes in contact with the end of the fishing rod.

THE AVERY STAMPING COMPANY, Cleveland, Ohio: General Metal Workers. Their catalogue calls attention to a few of the articles manufactured by them, and states that they are prepared not only to do all classes of Heavy and Light Blanking, Pressing and Stamping of Sheet Metals, but also to build Presses, Dies and special Tools for this class of work. Illustrations are shown of light and heavy Cylinders, seamless steel Cones, heavy tinned Soda Tanks, Cylinder and Boiler Heads, seamless steel Boxes, Elevator Buckets, Tote Boxes, Ladles, Steel Washers Agricultural Implement Seals, Seamless Steel Bottles, &c.

ST. LOUIS WRENCH COMPANY, St. Louis, Mo.: The Miller Wrench. The Wrench is cast and so constructed as to fit various sizes of square, hexagon and octagon Nuts without any mechanism, and is referred to as being an advantage to the cousumer, also to the seller or giver. The cost, it is stated, is not greater than the ordinary standard Wrench formerly used. The Wrench is made in nine styles and also as a ratchet Wrench.

IUSTUS ROE & SONS, Brooklyn, N. Y.: Roe's Steel Tape Measures, Pantographs, Pocket Protractors, &c. Illustrations are shown of Aluminum Plated Steel Tapes, Electric Reel, Aluminum Plated Steel Tapes in japanned metal cases with folding handles, Roe's Pocket Protractor, Square, Triangle, Rule and Scale combined, Roe's Pocket Table Book, &c.

THE HENRY C. HART MFG. COMPANY, Detroit, Mich.: United States Mail Boxes. An illustrated circular shows various styles of Metal Mail Boxes, finished in Teutonic bronze, antique brass, polished brass plated and japanned. Boxes are made for inside and outside use, with spring locks on some styles, and flat key barrel locks on others. The No. 5 Boxes are referred to as large enough for newspapers, and as safely protecting the mail from thieves, as well as from the inclemency of the weather.

MORLEY BROTHERS, Saginaw, Mich.: spring catalogue. The catalogue is of large size, containing 73 pages, fully illustrated, and shows some important additions to their standard line. The catalogue gives cuts of farm and garden Tools, Scythes, Cradles, Post-Hole Diggers, Lawn Mowers, Hay Tools, Wheelbarrows, Sheep Shears, Cordage, Screen Doors, Springs and Spring Hinges, Pumps, Hammocks, Refrigerators, Freezers, Cages, Oil and Gasoline Stoves, Harness, Lumbering Tools, &c.

PURITAN CYCLE WORKS, Portland, Maine, The Scanlan Company, proprietors: Puritan Cycles. A descriptive and illustrated circular calls attention to the construction of these machines and to the various parts. The Puritan will be made in a Roadster, 33 pounds; Light Roadster, 30 pounds; Scorcher, 28 pounds, and Racer, 21 pounds. A limited number of machines only will be made this year.

STOVER BICYCLE MFG. COMPANY, Freeport, Ill.: Bicycles. The new wheels put on the market for 1893 are the Thoroughbred Phœnix A, Phœnix Roadster B and Lady's Phœnix. In addition to these machines, the regular styles include the Roadster Phœnix C, Roadster Phœnix D, Lady's Phœnix Y, Lady's Phœnix Z and Lady's Paragon.

A. J. HARWI HARDWARE COMPANY, Atchison, Kan.: Price current of seasonable goods for spring and summer of 1893. Illustrations are shown of farm and garden Tools, Scythes, Post-Hole Diggers, Shovels and Spades, Dehorning Saws, Calf Weaners, Washing Machines, Clothes Wringers, Screen Doors, Window Screens, Freezers, Carriages, Implements, &c. Special attention is called to Wagon Wood-Work, Iron, Steel, &c., of which they have a well selected stock.

THE AMERICAN ORMONDE CYCLE COMPANY, New York: Bicycle Sundries. A large illustrated poster shows a line of Sundries for the cyclist, on the back of which is a relist prices of the goods, numerically arranged. The company state that for 1893 they have adopted the motto Everything for the cyclist.

SNEAD & BIBB, Louisville, Ky.: Stable Fittings, Structural and Ornamental Iron and Steel Work, &c. A catalogue devoted to Stable Fixtures, illustrates Hay Racks, Stall Guards, Stall Posts, Hitching Posts, Hitching Rings, Wheel Fenders, Stock Satlers, Cast-Iron Kettles, Cast-Iron Water Troughs, and a Central Automatic Water Supply System for stables and barns.

CINCINNATI MFG. COMPANY, Cincinnati, Ohio: Spring supplement, 1893. The supplement is devoted to Paint, Whitewash, Shoe, Scrub, Horse and Window Brushes, Cotton Mops, Whisk Brooms, Turkey Dusters, &c. Also, Nested Wood Bird Cages, Breeding Cages, Galvanized Poultry Netting, Screen Wire Cloth, Riddles, Sand Screens, Rat and Mouse Traps, Wire Moss Baskets, &c. A discount sheet accompanies the catalogue.

Weekly Prize Competitions.

$25.00.

FOR MORE THAN six months Weekly Prize Competitions ($10) have been an interesting and useful feature of the *Pharmaceutical Record*, a journal issued from this office and devoted to the interests of the drug trade. These weekly competitions have related to a variety of technical and business questions of interest to druggists, and have brought out a large amount of information of much service to the readers of that enterprising journal. In view of the success of this feature we have decided to announce a similar series of Weekly Prize Competitions on questions of interest to our readers, and invite a general participation on the part of the trade. As the object of these competitions is to obtain information which will be of practical service to our readers, and to discuss questions in which they are interested, we shall esteem it a special favor if any in the trade will suggest subjects for such competitions, which, if deemed suitable, we shall take pleasure in using.

In each competition there will be three prizes—a first prize of $12.50, a second prize of $7.50 and a third prize of $5. The prizes will be awarded for the answers which in the judgment of the committee of award are most suitable for publication and of the most general interest. These competitions are open to every one, and it is hoped that there will be a general response from business men. Those intending to compete are reminded that it will not be necessary to write long essays, but that comparatively brief and business-like answers to the different questions will be favorably regarded as meeting the purpose for which these competitions are announced. We shall have the privilege of publishing any or all of the contributions received.

Prize Competition No. 13.

SUBJECT :

The Best Method of Changing a Credit Into a Cash Business.

It is generally conceded that an all-cash business is preferable to one part cash and part credit, or to an all credit business. The object of this competition is to draw out practical suggestions for making such a change, and touches on such points as these :

Whether the change should be made on a certain announced date, or gradually ;

How to acquaint customers with the proposed change, whether personally, through circulars, or newspaper advertising ;

How to provide against shrinkage of sales under the new system ; and

Whether lower prices can be advantageously offered as an inducement to purchase for cash.

The following prizes will be awarded :

First prize	$12.50
Second prize	7.50
Third prize	5.00

Replies are to be received not later than March 18, 1893. They should be addressed as follows :

DAVID WILLIAMS,
96–102 *Reade street,*
New York.

Prize Competition No. 13.

Our Prize Competitions which have closed are now in the hands of the Committees of Award, who are giving careful attention to the claims of the different contributions. From the number of these and the evident merit of not a few of them, we are assured that a great deal of valuable information and suggestion will be put at the disposal of the trade.

The Weekly Prize Competitions noted below are now before our readers and remain open until the dates named:

No. 4. Closing February 25.
Suggestions as to Improvements in Putting up Goods.

No. 5. Closing March 4.
A Method of Securing a Reliable and Prompt Delivery of Goods.

No. 12. Closing March 11.
Arrangement of Pocket Cutlery.

No. 13. Closing March 18.
The Best Method of Changing a Credit into a Cash Business.

Another subject will be announced in our next issue.

A Cash System.

IN THE RETAIL Hardware establishment of R. B. Owen & Sons, Detroit, Mich., of which a description has been given in *The Iron Age*, signs are hung on the gas fixtures, the object being to clearly inform customers of their system of doing business. The signs are as follows :

We sell for cash only.
Goods cheap for cash.
Do not ask for credit.
We prefer our goods to credit.

Before starting business, nearly a year ago, the above firm decided to do a strictly cash business, and have carried out their intention to the letter. In a communication from them they refer to the matter as follows:

Relating to the "cash system," we were led to decide to adopt the same exclusively from the great majority of builders and contractors being very slow pay, even if worthy of credit at all. In this city we have over 700 boss builders, and not to exceed seven, if over five, are worthy of credit. From the fact that a new business would be very anxious to open trade we recognized the fact that we would be overwhelmed with people desiring credit, to whom we would be very apt to extend the same. We were counseled by a number of our friends that our decision was impracticable, but after the trial given the experiment we are more convinced than ever that we are right. We are aware that we could sell a much larger quantity of goods on the credit basis, but we find we sell a great many goods to people simply because they do not owe us, as it is human nature to shun a store to which we are indebted. We compel all bills to be paid for either at the time of purchase or upon delivery to the buildings. Our builders are fast becoming educated that it is the wisest thing for them to do to pay cash, as they buy their goods cheaper and buy only what they absolutely require. We shall strictly adhere to the "cash system," and unequivocally pronounce same a success.

The fact that a retail Hardware business is being successfully carried on upon a strictly cash basis, and that goods are not delivered until paid for, is of especial interest to the Hardware trade. That such a business is being done in a city where other Hardware stores are offering credit lends additional interest to the undertaking. The reasons given why it was decided not to do a part credit and part cash business exist in every community, and we suggest that any merchants who are dissatisfied with credit business consider the advisability of making a change to cash on or before January 1, 1893. Limiting credits first to 60 days, and then to 30 days, customers may gradually be prepared for the change to a cash basis.

It Is Reported—

That the Cross Hardware Company have been organized at Independence, Kan. The capital stock is $3500. The directors are Marion Cross of Neodesha and Milton Cross, F. G. Cross, L. H. Cross and A. B. Clark of Independence.

That Maseltene's Hardware store at Columbus, Mo., was completely destroyed by fire on the 3d inst.

That burglars effected an entrance to the Hardware store of W. W. Lewiston & Son, Liberty, Ind., on the 6th inst., and carried off all the revolvers and a small amount of cash. A large case of silverware was unmolested.

That Philip Loan's Tin shop at Somerville, Mass., was badly damaged by fire on the 9th inst. The loss is estimated at $4500; insurance $3500.

That the loss of the Chapin-Wells Hardware Company, Duluth, Minn., on their retail stock in the recent fire has been adjusted. The insurance companies pay a loss of $36,800 and relinquish all claim to salvage.

That James Allen of Brookville, Ohio, has opened up a Stove and Tinware store at Salem, Ohio.

That Watts Bros. have succeeded William Clapp, De Land, Fla., in the Hardware business.

That J. M. Whiton, of Seattle, Wash., has retired from the Hardware business and has been succeeded by C. W. J. Recker.

That the Hardware store of J. T. Uler & Co. at Dexter, Mo., was destroyed by fire on the 10th inst.

That the Smith Bros. Hardware Company, Columbus, Ohio, have increased their capital stock to $100,000.

That Cox & Steigewalt's Hardware store at Scranton, Iowa, was destroyed by fire on the 9th inst.

That John E. Davidson, of the firm of J. Davidson & Son, Hardware dealers, of Taneytown, Md., has sold out to McClellan Davidson, who will carry on the business after March 1.

That the stockholders of the F. Ozanne Stove and Hardware Company, Memphis, Tenn., at a meeting on the 9th inst., elected a Board of Directors for the coming year, consisting of P. B. Jones, L. Solari, L. N. Block, T. F. Duffin, E. L. Goldbaum, J. J. Williams, Robert K. Richardson and F. Ozanne. F. Ozanne

was chosen president; L. Solari, vice-president, and Robert K. Richardson, treasurer of the company.

That James D. Bigger, who recently purchased the interest of Jos. L. Myers in the Hardware firm of Myers & Bigger, Washington, Pa., has associated with himself his brother in law, James Bingham, who has purchased an interest in the business.

That the Star Hardware Company, of Toledo, Ohio, has been incorporated with a capital stock of $40,000 by Frank Hullenkamp, George J. Grossenbacher, George Schunk, Robert Bour and Henry A. Werthoff.

That the firm of Van DeWater & Burtiss, dealers in Stoves, Tinware, &c., Schenectady, N. Y., has been dissolved by the retirement of Robert J. Van DeWater. The business will be continued by Albert R. Burtiss.

That J. Gribble's Hardware store at Deshler, Ohio, was broken into by burglars on the 8th inst., and robbed of five Revolvers, Cartridges and two dozen Pocket Knives, the whole valued at $32.

That D. L. Starks has opened his new Hardware store at Rockaway, N. Y.

That E. G. Freeman and T. H. Parker, Binghamton, N. Y., have formed a copartnership and will hereafter conduct a Stove and Roofing business at 123 State street, occupying four stories, 150 x 20 feet. Messrs. Freeman & Parker have been in this business for a number of years and thoroughly understand it. On the first floor of the building is located the business office and Stove warerooms. The second floor has been fitted up handsomely and here will be exhibited all the latest designs in mantel pieces. The tin shop is located on the third floor, while the fourth floor will be devoted to tin and galvanized ware and galvanized cornice work.

That the capital stock of the Knapp & Spalding Hardware Company, Sioux City, Iowa, has been increased from $100,000 to $200,000.

That H. C. Pooler, who has been a prosperous dealer in Hardware and Tinware at Pittsfield, Maine, for the past 20 years, has closed out his business and retired.

Exports.

THE EXPORTS from the port of New York to foreign markets for the week ending February 11, 1893, exclusive of specie, amounted to $6,642,027. The following are the exports of Hardware, Machinery, Metals and related goods. The items for Canada and Mexico include merchandise by seagoing vessels only:

Antwerp.—Hardware, $645.—Emery, $750.—Machinery, $1010.—Agricult. Implts., $2830.—Iron Drums, $270.—Electrical Matl., $2201.—Firearms, $1080.

Argentine Republic.—Scales, $290.—Hardware, $1058.—Machinery, $7800.—Manuftd. Iron, $693.—Manuftd. Wood, $210.—Agricult. Implts., $10,798.—Twine, $79.—Clocks, $250.—Lamp Goods, $1844.

Amsterdam.—Machinery, $441.—Agricult. Implts., $11.—Manuftd. Wood, $11.

Alexandrovsk.—Agricult. Implts., $300.

Bordeaux.—Copper, $7000.—Lamp Goods, $24.—Agricult. Implts., $275.—Crucibles, $140.

Australia.—Hardware, $6669.—Carriage Matl., $1998.—Woodware, $165.—Plated Ware, $647.—Nails, $503.—Steel, $204.—Clocks, $513.—Electro-Plated Ware, $750.—Stocks and Dies, $392.—Cutlery, $18.—Agricult. Implts., $101.—Nails, $21.—Springs, $50.—Velocipedes, $40.—Whips, $100.—Manuftd. Steel, $15.—Electrical Goods, $65.—Machinery, $1795.—Manuftd. Iron, $835.—Lamp Goods, $2175.—Pumps, $112.—Saws, $17.—Brushes, $24.—Tally Registers, $37.—Cartridges, $50.—Carpet Sweepers, $75.—Manuftd. Wood, $1414.

Bolivia.—Nails, $465.—Hardware, $15.—G. P. Rings, $989.—Wire Cloth, $280.—Brass Goods, $10.—Hardware, $92.—Manuftd. Iron, $380.—Ammunition, $50.—Carriage, $155.

British West Indies.—Manuftd. Iron, $406.—Woodware, $56.—Brushes, $29.—Scales, $80.—Mag. Metal, $25.—Cart, $65.—Carriages, $375.—Fishlines $40.—Electrical Matl., $494.—Agricult. Implts., $57.—Grindstones, $80.—Nails, $31.—Refrigerators, $30.—Bicycle, $75.—Building Matl., $245.—Machinery, $500.—Hardware, $323.—Manuftd. Wood, $70.—Lamp Goods, $205. Nails, $52.—Carriage Matl., $272.—Iron Safe, $100. Pig Iron, $216.—Emery Cloth, $8.—Crucibles, $8.—Twine, $17.—Tinware, $5.—Brass Goods, $62.—

British Guiana.—Machinery, $46.

Berlin.—Woodware, $75.—Electrical Matl., $150.

Bristol.—Zinc Ashes, $4488.

British Possessions in Africa.—Plated Ware, $5300.—Machinery, $4038.—Lamp Goods, $408.

Bremerhaven.—Tacks, $35.

Batoum.—Scales, $250.

Brazil.—Hardware, $5950.—Manuftd. Wood, $275.—Phono. Matl., $500.—Agricult. Implts., $111. Irons, $213.—Pumps, $530.—Railroad Matl., $1026.—Perambulators, $145.—Iron, $265.—Manuftd. Iron, $684.—Lamp Goods, $575.—Wringers, $1375.—Cartridges, $245.—Firearms, $190.—Bird Cages, $46.—Tinware, $73.—Saws, $9.—Machinery, $64 4. Electrical Matl., $49,500.—Velocipedes, $202.—Scales, $325.—Cutlery, $75.

British Honduras.—Carriage Cases, $10.—Lamp Goods, $36.—Nails, $4.—Cartridges, $71.—Firearms, $29.—Hardware, $142.—Ox Bows, $110.—Woodware, $18.—Wheels, $76.—Manuftd. Iron, $55.—Nails, $25.

Brussels.—Woodware, $288.

British East Indies.—Freezers, $17.—Lamp Goods, $2182.—Carriage Matl., $100.—Cartridges, $416.—Firearms, $968.—Clocks, $1155.—Razors, $24.—Cartridge Shells, $195.

Bremen—Plated Ware, $35.—Woodware, $550.—Emery Wheels, $135.—Agricult. Implts., $1018.—Nickel Frames, $64.—Manuftd. Iron, $512. Manuftd. Wood, $601.—Machinery, $970.—Firearms, $30.—Electrical Matl., $160.

Birkenhead.—Machinery, $557.

Charkow.—Scales, $205.

Carthagena, Spain.—Crucibles, $100.

Central America.—Manuftd. Iron, $3245.—Lamp Goods, $546.—Cartridges, $229.—Machinery, $3908.—Velocipedes, $7.—Pumps, $1304.—Manuftd. Copper, $34.—Quicksilver, $350.—Fuses, $22.—Tinware, $101.—Brushes, $216.—Woodware, $78.—Wheelbarrows, $68.—Plumbing Matl., $17.—Scales, $19.—Nails, $27.—Wagon Matl., $65.—Pins, $24.—Freezers, $12.—Car Matl., $1560.—Steel, $53.—Hardware, $2380.—Manuftd. Wood, $1785.—Cutlery, $195.—Railroad Matl., $217.—Spikes, $5.—Grindstone, $40.—Saws, $90. Agricult. Implts., $23.—Percussion Caps, $50.—Manuftd. Steel, $36.—Electrical Matl., $1153.—Powder, $64.—Iron, $327.—Wheels and Axles, $660.—Twine, $24.—Firearms, $184.

China.—Hardware, $461.—Lamp Goods, $567.—Firearms, $196.—Twine, $83.

Canada.—Metal Goods, $80.—Machinery, $4918.—Manuftd. Wood, $14.

Chili.—Manuftd. Wood, $423.—Hardware, $6894.—Lamp Goods, $755.—Plated Ware, $3299.—Tinware, $65.—Woodware, $122.—Firearms, $135.—Coffin Goods, $28.—Carriage Matl., $1352.—Steel Tires, $13.—Bird Cages, $44.—Cutlery, $417. Brushes, $106.—Manuftd. Iron, $3500.—Brass Goods, $120.—Twine, $8.—Freezers, $54.—Cartridges, $176.—Scales, $119.—Machinery, $3059.—Pumps, $132.—Agricult. Implts., $7740.—Nails, $1500.—Lubricators, $80.—Carpet Sweepers, $50.—Car Locks, $705.

Christiania.—Car Springs, $1492.—Manuftd. Wood, $238.—Manuftd. Iron, $23.

Copenhagen.—Manuftd. Iron, $207.—Hardware, $310.—Radiators, $411.—Agricult. Implts., $10.—Belting, $56.—Britannia Ware, $50.

Cuba.—Hardware, $15,660.—Manuftd. Wood, $3573.—Lamp Goods, $907.—Sugar Wagons, $800.—Railroad Matl., $2337.—Cutlery, $1971.—Powder, $168.—Pumps, $387.—Machinery, $17,908.—Nails, $425.—Tinware, $272.—Water Closets, $68.—Pig Iron, $85.—Pins, $63.—Iron Pipe, $1736.—Iron Safes, $509.—Railroad Cars, $5725.—Sugar Wagons, $3181.—Valves, $742.—Scales, $1231.—Coal, $3432.—Refrigerators, $195.—Platform Cars, $1650.—Telephones, $112.—Zinc, $17.—Locomotive Matl., $29.—Nails, $107.—Tin, $51.—Iron, $1433.—Percussion Caps, $30.—Manuftd. Steel, $82.—Axles, $135.—Blocks, $47.—Wheelbarrows, $15.—Agricult. Implts., $849.—Filter, $28.—Railroad Frogs $144.—Fuse, $10.—Freezers, $10.—Manuftd. Lead, $65.—Manuftd. Iron, $12,666.—Grindstones, $344.—Saws, $170.—Woodware, $471.—Electrical Matl., $3124.—Tinfoil Caps, $25.—House, $2200.—Baby Cabs, $50.—Asbestos, $180.—Velocipedes, $131.—Packing, $45.—Car Matls, $3045.—Railroad Velocipede, $45.—Firearms, $102.—Springs, $1060.—Brushes, $44.—Boiler Matl., $11.—Spikes, $444. Nails, $1482.—Mag. Metal, $110.—Twine, $96.—Coffin Matl., $26.—Bellows, $59.—Cart, $65.—Store Trucks, $66.—Emery Wheels, $20.—Belting, $85.—Carriage Matl., $170.—Iron Tubes, $576.—Crucibles, $23.—Manuftd. Copper, $238.—Coffins, $760.

Dutch East Indies.—Firearms, $118.

Dutch West Indies.—Hardware, $156.—Twine, $51.—Woodware, $20.—Needles, $2.—Manuftd. Iron, $61.—Lamp Goods, $28.—Water Cooler, $4.

Ekaterinslaw.—Agricult. Implts., $795.

Elizabethgrad.—Agricult. Implts., $967.

Ecuador.—Hardware, $227. Scales, $89.—Agricult. Implts., $24.—Manuftd. Iron, $1650.—Machinery, $319.—Nails, $5.—Iron Safe, $34.—Tinware, $10.—Cartridges, $30.—Cutlery, $192.—Needles, $21.

French West Indies.—Woodware, $5.—Hardware, $13.—Powder, $15.—Whips, $5.—Nails, $26.—Twine, $4.—Brushes, $2.—Cartridges, $2.

Goeppingen.—Hardware, $225.

Gottenburg.—Machinery, $630.

Genoa.—Hardware, $160.—Electrical Matl., $2040.

Glasgow.—Oxide Zinc, $896.—Electrical Matl., $150.—Hardware, $88.—Machinery, $465.—Manuftd. Wood, $176.

Hong Kong.—Firearms, $930.—Scales, $2162.—Woodware, $90.—Lamp Goods, $155.—Cartridges, $273.

Japan—Wire Cloth, $1093.—Pumps, $96.—Freezers, $30.—Hardware, $371.—Rubber Goods, $19.—Belting, $136.—Electrical Matl., $1272.—Refrigerators, $100.—Agricult. Implts., $90.—Zinc Tops, $76.

Hayti.—Manuftd. Iron, $125.—Electrical Goods, $470.—Carriage Matl., $10.—Baby Carriage, $16.—Cart, $54.—Woodware, $13.—Lead, $52.—Plated Ware, $33.—Store Truck, $6.—Brushes, $9.—Hardware, $220.—Manuftd. Wood, $59.—Lamp Goods, $194.—Carriages, $1493.—Bicycle, $40.—Tiles, $21.—Nails, $44.—Cutlery, $18.—Pumps, $35.—Axles, $141.—Wheelbarrows, $23.—Spikes, $10.—Iron Safe, $30.

Hamburg.—Copper, $5625.—Razor Strops, $12.—Cutlery, $81.—Whetstones, $10.—Agricult. Implts., $1132.—Carpet Sweepers, $58.—Wheelbarrows, $13.—Machinery, $376.—Electrical Matl., $385.—Pumps, $45.—Manuftd. Iron, $73.—Lead, $2400.—Spelter, $3400.—Hardware, $1673.—Manuftd. Wood, $619.—Firearms, $2787.—Britannia Ware, $600.—Scales, $119.—Water Closets, $63.—Woodware, $308.—Oil Well Supplies, $386.—Brass Goods, $20.—Ice Cream Freezers, $155.—Twine, $45.—Old Metal, $441.—Silver Ore, $372.

Hull.—Agricult. Implts., $1105.—Razor Strops, $54.—Fish Lines, $36.—Plated Ware, $176.—Manuftd. Wood, $349.—Hardware, $1577.—Scythe Stones, $160.—Woodware, $282.—Wringers, $45.—Nails, $55.—Cutlery, $46.—Fishing Tackle, $47.

Havre.—Copper, $7000.—Hardware, $125.—Manuftd. Iron, $178.—Manuftd. Wood, $415.—Agricult. Implts., $100.—Machinery, $4543.—Electrical Matl., $5851.

Kief.—Agricult. Implts., $4895.

Kertch.—Agricult. Implts., $1687.

London.—Manuftd. Iron, $530.—Hardware, $2745.—Machinery, $13,140.—Agricult. Implts., $1191.—Roller Skates, $68.—Woodware, $1465.—Emery, $300.—Manuftd. Wood, $2714.—Lead, $4500.—Plated Ware, $64.—Spelter, $8800.—Lamp Goods, $40.—Electrical Matl., $175.—Pumps, $173.—Scales, $152.

Liverpool.—Woodware, $268.—Machinery, $4842.—Lamp Goods, $275.—Money Drawers, $1000.—Steel, $50.—Electrical Matl., $90.—Firearms, $109.—Whetstones, $25.—Agricult. Implts., $582.—Copper Matte, $7000.—Manuftd. Wood, $6169.—Iron Drums, $365.—M. Rollers, $1200.—Manuftd. Iron, $176.—Copper, $15,340.—Hardware, $2677.—Oxide Zinc, $840.—Composition, $40.—Carpet Sweepers, $25.

Luarca.—Scales, $198.

Lisbon.—Machinery, $32.

Leeds.—Manuftd. Iron, $1600.—Saws, $315.—Machinery, $400.

Mexico.—Hardware, $2523.—Manuftd. Iron $5492.—Lamp Goods, $641.—Agricult. Implts. $356.—Iron, $255.—Pumps, $662.—Brass Goods $310.—Coffin Matl., $16.—Belting, $1092.—Cartridges, $126.—Firearms, $1170.—Saws, $14.—Lead Seals, $200.—Car Matl., $1116.—Barrows, $201.—Manuftd. Copper, $825.—Fuse, $186.—Wire Goods, $44.—Nails, $98.—Bicycles, $70.—Boiler, $1493.—Washers, $175.—Cartridge Shells, $1303.—Coal, $620.—Nails, $30.—Thermometers, $16.—Railroad Cars, $1980.—Tinware, $15.—Manuftd. Wood, $29.—Machinery, $9986.—Cutlery, $1174.—Scales, $140.—Nails, $541.—Iron Pipe, $109.—Hose, $30.—Percussion Caps, $21.—Refrigerators, $90.—Electrical Matl., $749.—Emery Wheels, $16.—Smokestack, $150.—Trusses, $64.—Scientific Insts., $101.—Quicksilver, $3645.

Moscow—Iron Pipe, $12,500.—Pumps, $170.—Scales, $157.

Meliotopol.—Agricult. Implts., $453.

New Brunswick.—Coal, $3250.

Nova Scotia.—Coal, $1000.

Newcastle.—Woodware, $470.—Doors, $2220.—Manuftd. Wood, $45.—Machinery, $378.

New Zealand.—Hardware, $8292.—Manuftd. Iron, $790.—Manuftd. Wood, $1830.—Nails, $840.—Gun Primers, $26.—Wringers, $220.—Woodware, $774.—Percussion Caps, $5.—Ice Cream Freezers, $25.—Tinware, $149.—Whetstones, $15.—Plated Ware, $337.—Tacks, $6.—Thermometers, $23.—Lamp Goods, $1032.—Agricult. Implts., $1758.—Carriage Matl., $1360.—Machinery, $1940.—Store Trucks, $30.—Scales, $432.—Wheelbarrows, $15.—Cutlery, $382.—Nails, $38.—Carts, $135.—Cartridges, $197.—Sash Cord, $36.—Carpet Sweepers, $38.—Brushes, $24.—Firearms, $29.

Odessa.—Agricult. Implts., $27,369.

Philippines.—Razor Strops., $21.—Whips, $39.—Plated Ware, $6.—Agricult. Implts., $29.—Hardware, $70.—Freezers, $71.

Porto Rico.—Manuftd. Wood, $3.—Cutlery, $81.—Wagon Matl., $27.—Brushes, $15.—Machinery, $1608.—Nails, $347.—Pumps, $129.—Twine, $20.—Boiler Tubes, $35.—Metal Goods, $156.—Electrical Goods, $143.—Hardware, $1311.—Manuftd. Iron, $1448.—Lamp Goods, $113.—Grindstones, $103.—Scales, $147.—Tacks, $8.—Woodware, $183.—Wheelbarrows, $4.—Boiler, $1300.—Packing, $3.—Carriage Matl., $48.—Water Closet Matl., $100.—Iron Pipe, $35.—Nails, $15.—Tinware, $9.—Axles, $24.

Peru.—Agricult. Implts., $1382.—Brushes, $142.—Hardware, $1124.—Saws, $80.—Manuftd. Wood, $52.—Lamp Goods, $177.—Grindstones, $14.—Coal, $250.—Nails, $165.—Woodware, $128.—Iron Safe, $200.—Machinery, $864.—Cartridges, $59.—Scales, $432.—Tacks, $117.—En. Cloth,

$27. — Cutlery, $245. — Manuftd. Iron, $165.— Pumps, $29. — Electrical Matl., $233. — Boiler Tubes, $155.—Coffin Matl., $160.—Water Meters, $104.

Rotterdam.—Carriages, $218.—Pumps, $175. Hardware, $57. — Agricult. Implts., $276. — Wringers, $70. — Copper, $45,000. — Manuftd. Wood, $309.—Manuftd. Iron, $2.—Scythe Stones, $300.

Rostoff.—Agricult. Implts., $51,075.—Pumps, $139.

San Domingo.—Lamp Goods, $11.—Pumps, $270. — Machinery, $3177. — Woodware, $11. — Scales, $44.—Hardware, $360.—Manuftd. Iron, $93. — Trucks, $26. — Coal, $178. — Nails, $49.— Twine, $11.—Wire Goods, $45.

St. Petersburg.—Iron Rolls, $225.—Sulky, $310.

Smyrna.—Iron Clips, $400.

Samara.—Agricult. Implts., $18.

Stockholm.—Car Springs, $229.—Steel, $300.

Sundsvall.—Saws, $54.

Spanish Possessions in Africa.—Manuftd. Iron, $400.

St. Helens.—Hardware, $371.

Taganrog.—Agricult. Implts., $6935.

United States of Colombia.— Manuftd. Iron, $7619.—Agricult. Implts., $143.— Pumps, $162.—Carts, $60.—Nails, $144.—Firearms, $327.— Needles, $21.— Nails, $18.—Tacks, $54.—Copying Press, $14.—Bicycles, $60.—Stamp Handles, $115. — Scales, $126. — Cartridge Shells, $19. — Gun Primers, $11.—Twine, $19.—Washers, $36.—Belting, $61.—Ice Box, $14.—Car Trucks, $1930.— Hardware, $3736.—Manuftd. Wood, $76.— Lamp Goods, $604.—Machinery, $283.—Electrical Goods. $1429.— Cutlery, $1308.— Brushes, $37.—Woodware, $216.— Cartridges, $289.— Powder, $29.— Nickeled Ware, $70.—Boiler Tubes, $179.—Tinware, $23.—Refrigerators, $29.—Car Matl., $1973. —Plated Ware, $868.—Signals, $41.—Shot, $13.— Grindstones, $25. — Manuftd. Copper, $15. — Freezers, $50.—Packing, $41.—Cotton Gins, $241. Tinware, $147.

Vienna.—Agricult. Implts., $59.

Venezuela.—Manuftd. Iron, $3863.—Velocipedes, $1285.—Windmill Matl., $227.—Scales, $260 —Twine, $962.— Thermometers, $25 — Cutlery, $37.—Stocks and Dies, $16.—Axles, $33.—Brushes, $130.—Agricult Implts., $115.—Brass Goods, $29. Belting, $5 —Carriage, $290.—Emery Paper, $19. — Hardware, $1242. — Manuftd. Wood, $85. — Lamp Goods, $163.—Hand Carts, $42.—Tricycle, $7.— Nails, $450.— Iron Pipe, $70.— Electrical Matl., $54.—Nails, $22.— Tacks, $7.— Machinery, $8743. — Needles, $24. — Pumps, $6.— Electrical Matl., $2771.—Manuftd. Copper, $28.—Saws, $12. —Iron Safe, $328.—Gas Fixtures, $30.—Slugs, $5. Surveying Instruments, $125.—Valves, $31.

Paints and Colors.

It should be understood that the prices quoted in this column are strictly those current in the wholesale market, and that higher prices are paid for retail lots. The quality of goods frequently necessitates a considerable range of prices.

With very few exceptions, manufacturers, importers and jobbers report a dull week in Paints and Colors. Stormy weather and low temperature has been a more or less serious drawback to distribution in all territory contiguous to this center, and orders for goods for spring season delivery are also backward, for reasons not clearly defined. As frequently the case, when results do not meet expectations, some salesmen take chances in the matter of originating "trade winners" in the form of special prices on one or more lines of goods, and such policy leads to reports of general weakness on the goods thus handled. Aside from irregularities that come about in this manner, however, few if any changes take place, and the general market shows fairly good form, all things considered.

White Lead.—Corroders have experienced a quiet week The local demand has run very light, probably because of the impossibility of carrying forward outdoor work and the additional fact that deliveries on former orders not only keep jobbers well stocked, but afford ample supplies for consumers whose lines of work are not directly affected by weather conditions. The usual rumors about the National Lead Company's list prices being shaded by some of the "branches" of the organization continue to circulate, but as far as the local market is concerned such rumors are without foundation. In any event, this statement is warranted by assurances from the sales agency that no concessions are made at headquarters. The outside corroders who have maintained friendly relations with the National Company also affirm that they adhere to the list. The only "cut" rates that can be traced are on sales of small parcels from second hands. There is a probability, however, that special quotations on "quick process" and mixed Leads may cause some confusion. The former are sold at about ½¢ under the ruling prices for Old Dutch process Lead, while the mixtures go at prices as variable as the quality of the goods.

Red Lead and Litharge.—There is no visible change in the market for either commodity. Orders come along in a perfunctory sort of way, and reach fairly average proportions for the season. On the high grades—that is to say, the by-product of corroders—old list prices prevail, but slight irregularity could doubtless be discovered in foreign Lead and in glass-makers' grades of Litharge.

Orange Mineral.—No change is quoted in prices of either domestic or imported stock, the market retaining fairly firm tone, although business is momentarily rather slow.

Zincs.—Remarkably low cost of base material, along with the fact that production of American Oxide is on an unprecedented scale for this season of the year, prompts some critical observers to express doubt about the inherent strength of the market. Investigation, however, fails to discover anything in the nature of weak spots. Manufacturers' agents affirm that the old marking arrangement is being adhered to, that former prices are maintained and that business is fully up to the average volume fo9 the season.

Colors.—Business in the more staple lines of Dry and Oil Colors has been rather slow. The movement in bulk Colors for grinders' use has also tapered off somewhat. The offering by manufacturers and importers has been reserved, however, and prices therefore hold quite steady. For some specialties in Mixed Paints business has been comparatively good, chiefly at old prices.

Oils and Turpentine.

All the underlying influences that have figured prominently in bringing about higher prices for nearly all descriptions of Animal and Vegetable Oils during the past 60 days are still prominent factors. The heavy consumption in the manufacture of Lard compounds supports Cotton Seed Oils in the face of reshipments from Europe to this port; the high cost of Raw Lard is as potent as heretofore in affecting the price of Lard Oil, and this, along with extreme cost of inferior greases, and the strong statistical position of all varieties of Crude Fish Oils, still has a stimulating effect upon other lubricants and soap-making materials. Even Mineral Oils are slightly affected. Consumption in some lines of Oils is restricted by current high cost, but according to most accounts the general distribution is nearly up the average for the season.

Linseed Oil.—City crushers and handlers of Western brands have been filling orders during the week at the old prices. At the same time the offering has been more or less reserved and a prominent display made of confidence in better prices. The quiet condition of the Paint trade and slowness in other lines where Linseed Oil is used extensively has operated to check business more or less, however, and hardly the average movement has taken place during the week.

Cotton Seed Oils.—The distinctly new feature in this line is the shipment of several hundred barrels of American Oil from England and about 2000 barrels from the Continent to New York. The movement was prompted by the fact that the American market showed the greatest profit. This case of "sending coals to Newcastle" has, however, had little effect, aside from causing slight irregularity in prices for small lots ex-dock here. The large Western consumers have continued to buy in the Southern markets at full former prices, paying 55¢ at mill for Crude in bulk, and 64¢, Chicago delivery, for prime Summer Yellow. On the spot there have been sales at 57¢ for prime Crude, 64¢ @ 65¢ for prime Summer Yellow and 68¢ for Butter quality.

Lard Oil.—Prices have undergone a further advance, $1.05 now standing as bottom quotation for prime stock, while as high as $1.10 is asked by some pressers. At this extremely high cost buyers purchase as sparingly as possible, but pressers gauge their production almost wholly by the run of orders and carry unusually light stocks. The lower grades of Oil are similarly situated and realize full former prices.

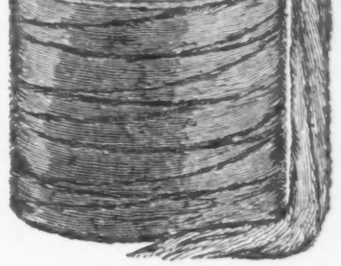
Fish Oils.—There has been no important movement in Crude, Sperm, Whale or Menhaden Oils, chiefly for the reason that there is very little stock in first hands to move. The manufactured products are a little slow of sale at present, but prices for all kinds are very firm, and quoted higher in some instances. Cod Oils also very firm, and selling rather more freely.

Miscellaneous.—No decided change has taken place in Olive, Cocoanut, Tallow, Neatsfoot, Red or Rapeseed Oils, but the market throughout is very firm, with a fair average business passing.

Spirits Turpentine.—The market has been rather quiet throughout the week, few orders for other than small quantities having come in from any quarter. With insufficient arrivals to cause any great accumulation of stock here, prices have remained quite steady.

Coiled Oakum.

The Henry B. Newhall Company, 105 Chambers street, New York, and Boston, Mass., are introducing an improved form of coiled oakum, as here shown. It will be seen that the strand is drawn from the center, as twine is drawn from a ball, the size of the strand being easily increased by folding or diminished by dividing it.



Oakum in Coil.

The convenient form of putting up this article is referred to by the makers as especially desirable to consumers and dealers in oakum, thereby saving much time and waste, which frequently equals the cost. It is said to be particularly adapted to ship calking, plumbing, water pipes, &c. The material used in the manufacture of this article is new Russia hemp, and is put up in 5 pound coils ready for use, 10 coils to the bale.

Hamper and Toilet Case Combined.

A convenient household article known as the hamper and toilet case combined is put on the market by the Folding Bath Tub Company of Marshall, Mich. The cabinets are made of ash with natural or antique finish, with the lower compartment for holding soiled clothes, pivoted at the bottom to fall forward. There is a ventilating flue at the top, to avoid having the clothes up too closely. It is designed to be placed in either bath or sleeping room, affording as it does a toilet case in connection with a hamper.

The Wayne Self-Measuring Oil Tank.

The Wayne Oil Tank Company, Fort Wayne, Ind., are, among others, introducing the two forms of tanks shown in the accompanying illustrations. Fig. 1, their first-floor tank, is encased in Southern pine, highly finished in natural wood, and attractive in appearance. The pumping apparatus is composed of metal entirely, being made with such accuracy, it is stated, as to require no packing. The indicator to this, as to all their tanks, is a simple contrivance indicating the exact quantity of liquid in the tank at all times. Stops attached to the pump regulate the amount of oil drawn at a single stroke, whether it be a quart, half gallon or gallon.

Fig. 1.—First Floor Oil Tank.

In measuring the quantity of oil desired to be drawn, it is explained that the proper stop is pushed inward, while the raising and lowering the lever forces the exact quantity of oil indicated into the can or vessel, which is suspended on the discharge, thus avoiding the use of any and all measures and funnels. The advantages claimed by the makers are that all drippings are carried back to the tank; that the entire operation can be performed in the dark if necessary; that the drawing is rapidly done, leaving clean hands, avoiding greasy, bad smelling floors, checking all evaporation, and that the result is an exact measurement in every instance.

Fig. 2 illustrates their cellar tank and connections, the cabinet of which is above the floor, requiring but little space, and is carefully finished. The drip basin on the floor is to return all drippings to the tank, keeping the surroundings clean at all times.

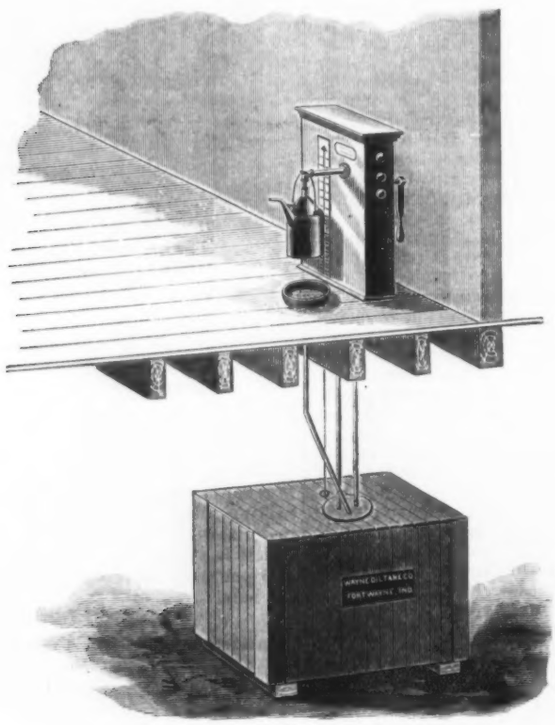


Fig. 2.—Cellar Tank and Connections.

Among the features for which the makers claim superiority are: That the plunger, being attached to a ratchet movement, operated by a lever, results in producing a quicker action with very much better results and greater ease than by direct motion; that it is made of solid metal, requiring no packing, and does not wear out or leak; that the valves are made of the best brass, ground air tight, and in the construction of the tanks only the best galvanized iron is used; that all measuring adjustments are on the outside of the tank or exposed so as to be accessible at all times, and that the pump can be connected to any sized tank.

Ideal No. 3 Special.

The Ideal Mfg. Company, New Haven, Conn., have recently put upon the market a new form of reloading implement for rifle cartridges, as shown in Fig. 1. The single adjustable chamber shown in Fig. 1, as attached to the tool, will be made to crimp the shell or not, as ordered. If it is desired for patched bullets, or everlasting shells, it will be furnished without crimp. If grooved bullets are wanted to project beyond the muzzle of the shell to make powder room, and not crimp until the bullet is seated in the shell at standard depth, the chamber should be used to crimp. If the muzzle of shells is expanded so as not to hold the bullets securely, when no crimp is desired, the muzzle re-sizer, Fig. 2, is used. If light charges with either round or grooved bullets seated below the muzzle of the shells is desired, the double adjustable chamber, Fig. 3, is required. The manufacturers state that molds for any bullet may be selected, and chambers made to suit; and that with this tool the shooter may make his own ammunition, as he desires, to meet all requirements.

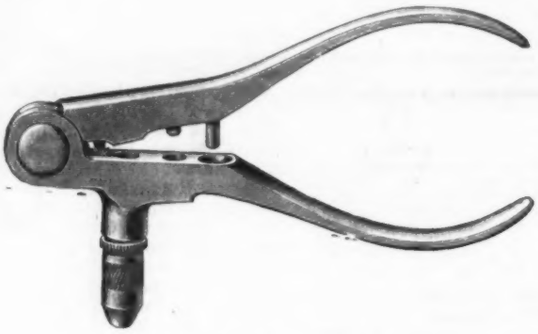


Fig. 1.—Ideal No. 3 Special.

Fig. 2.—Muzzle Resizer.

Fig. 3.—Double Adjustable Chamber.

Aluminum Cooking Utensils.

Illinois Pure Aluminum Company, Lemont, Ill., are manufacturing these goods in saucepans, frypans, washbowls, tea and table spoons. The samples of stamped saucepans which we have seen show the goods well and neatly made, with aluminum handles riveted on, and an entire absence of solder. These are made in 1, 2 and 4 quart sizes, and weigh as follows;

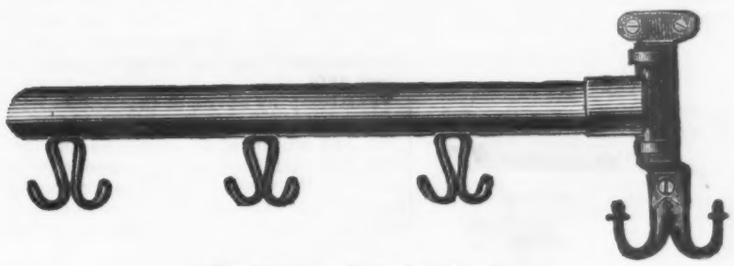
1-quart saucepan	3¾ ounces
2-quart saucepan	8 ounces
4-quart saucepan	17 ounces

The manufacturers claim for these goods freedom from poison, lightness, great heat conductivity, heat-retaining properties, cleanliness, impossibility of rust and absence of all solder. They state that under no circumstance can poison be extracted

from aluminum, and that these utensils possess all the virtue of porcelain-lined utensils in cooking delicate food, such as milk or fruits. The goods, we are advised, are meeting with ready sale.

The Champion Hinged Clothes Bar.

The illustration here shown is of a hinged clothes bar put upon the market by the Besel Patents Company, 133 South Second street, Philadelphia.



The Champion Hinged Clothes Bar.

The bar swings in a hinge which is easily affixed by three screws to the back of a wardrobe or closet. There are double hooks on the bar, so arranged as to allow of garments being hung quite closely. The novel feature of the bar is that it allows of the garments on each hook being readily viewed or examined without removal. The capacity of the wardrobe, too, is more than doubled.

The cut shows the bar ready for adjustment. Bars are made in a variety of sizes, and are therefore adapted to any wardrobe or closet.

Carpet Truck.

Ames Plow Company, Boston, and 53 Beekman street, New York, are putting on the market the carpet truck herewith illustrated. The truck is furnished with plain iron wheels, or with rubber band wheels; and if desired the truck can be furnished with wheels placed inside the handles to prevent them marring or scratching the store furniture. The manufacturers state that the truck is light and well made, and is adapted for rolls of carpet. Attention is directed to the extra long top iron as a great improvement for this purpose.

Carpet Truck.

The Riehlé Bros. Testing Machine Company announce that beginning April 1, J. R. Matlack, Jr., will act as their representative at the World's Columbian Exposition, Chicago, and can be found, previous to the opening of the exposition, at the office of R. W. Hunt & Co., Rookery, Chicago.

Murrin's Hat Rest.

The Murrin Hat Rest Company, 1515 South Jefferson avenue, St. Louis, Mo., are offering this article as shown in the accompanying cuts. The points of excellence claimed by the makers for the rest are that the hat is positively and firmly held, and not allowed to sway to the right or to the left; that the hat cannot come off, as its own weight locks it automatically between the upper and lower bars; that the hat when lifted to a horizontal position, goes off or on with ease; that there is nothing to catch and tear the lining of the hat, and that with a silk hat it is impossible to ruffle the fur in going on or off. The point is made that it preserves the shape of a hat in its original contour, and the hat is saved from the innumerable tumbles the ordinary hook inflicts, keeping it in shape to a good old age.

Fig. 1.—Murrin's Hat Rest.

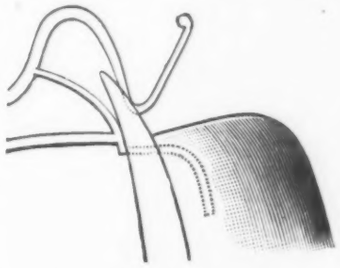
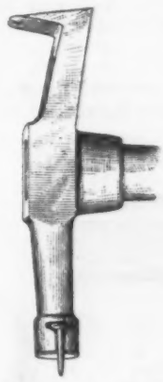


Fig. 2.—Hat Rest in Use.

The Richardson Tack Hammer.

Smethport Machine Company, Smethport, Pa., are offering the hammer illustrated herewith. A feature of the hammer is the peculiar shaped claw, the angle of which is such that a tack may be removed by simple downward pressure, and will remove closely driven tacks without injury to the base board or the surrounding wood work. The steel claw is ground to a sharp edge, and the manufacturers state that they will replace any hammer on which the claw has been broken by legitimate use. One grade of hammer is magnetized, and has a recess in the head corresponding in shape to a tack. This grade or style is designed for ceiling work, and for driving tacks where only one hand can be used. The unmagnetized grade is designed for all other kinds of work. The manufacturers remark that the hammer is perfectly balanced, and has a fine round handle, and, while not highly finished, is strong and durable, and a superior tool for a cheap hammer.



The Richardson Tack Hammer.

Steel Shop Box.

The Shop Box shown herewith is offered by the Avery Steel Mfg. Company, Forty-third street and Stewart avenue, Chicago, Ill. The box, including body and handles, is made of one piece of steel, turned on the upper edge, and is provided with an aperture at each end for the insertion of a hook for moving it around the shop. The boxes are made in three sizes, from 18 to 21 inches long, 10 inches wide and 5 inches deep, of 16 and 18 gauge steel. They are designed for use by nail mills, bolt and nut works, &c., for handling the small stuff about their works.

Steel Shop Box.

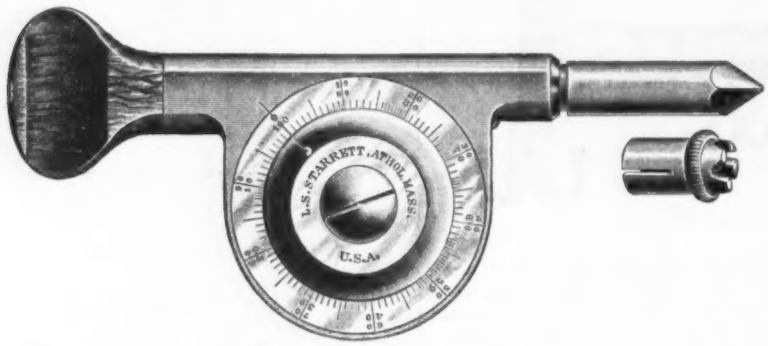
The Eureka Lawn Mattock.

The Eureka lawn mattock herewith shown is put on the market by the Railway Speed Recorder Company, Kent, Ohio. It is made with steel blades for cutting, cast in the head, and is designed as a tool for many purposes around the house, such a trimming paths, drives, &c.; also for loosening up earth in hard places in the garden or flower beds, digging up thistles, weeds, &c. It is referred to by the makers as light and strong, convenient for any person to handle, and its price as bringing it within the reach of all.

The Eureka Lawn Mattock.

Starrett's Improved Speed Indicator.

L. S. Starrett, Athol, Mass., is introducing the indicator, as herewith shown. It is described as having the working parts inclosed like a watch, and well made. The graduations show every revolution, and with two rows of figures read both right and left as the shaft may run. An auxiliary split cap is made to slip over the pointed spindle to adapt it to use on a center or pointed shaft, as shown separately in the cut, and the revolving dial is frictionally attached to the central stud. On



Starrett's Improved Speed Indicator.

the index line is an oval-headed pin, by a slight pressure against which the dial may be instantly adjusted to the 0 line on the graduated plate. It is stated that while looking on the watch each hundred revolutions may be counted by allowing the oval-headed pin on the revolving disk to pass under the thumb as the instrument is pressed to its work. The instrument is nickel-plated and has either an ebony or rosewood handle, to avoid heating the fingers when run at high speed. The manufacturer warrants every instrument first-class.

Gem Nozzle Holder.

Gibbs Mfg. Company, Canton, Ohio, are putting an improved form of their Gem nozzle holder for sprinkling lawns on the market, as shown herewith. It is made of malleable iron and spring-steel wire, galvanized to avoid rusting. It is remarked that the hose is held firmly in the holder and can be adjusted to any elevation in an instant without the annoyance of thumb nuts or other contrivances. The

Gem Nozzle Holder.

point is made, that with the use of the holder water can be thrown where wanted, the position of the nozzle changed as desired without shutting off the water before approaching it, or without having to pass over wet grass, and that on small or narrow strips of lawn and garden the stream is directed to any desired point without splashing water upon other surfaces.

Bradley Shelf Bracket.

Atlas Mfg. Company, 71 Hamilton street, New Haven, Conn., are putting on the market an improved form of their Bradley bracket, as herewith illustrated. In the improved form the screw holes on the long side of the bracket are side by side, instead of one over the other, as formerly. This is referred to by the makers as an advantage, as the holding power of both screws is now fully utilized, and the convenience in handling and driving the screws is much greater than in the first form, where the holes come directly behind the brace. The point is made that the present form also secures a much wider bearing sideways, and adds to the symmetry and correct proportions

Bradley Shelf Bracket.

of the bracket. The bracket is described as light and artistic in design, finely finished, having more strength than the same size cast-iron bracket; as not being brittle, and not breaking in shipping or in driving the screws from the warping of a shelf or from a sudden blow, and as saving 75 per cent. in the cost of freight. The brackets are made in 4 x 5, 5 x 7, 6 x 8, 7 x 9 and 8 x 10-inch sizes, and have a tin finish.

Leonard Cleanable Hardwood Refrigerators.

Grand Rapids Refrigerator Company, Grand Rapids, Mich., are putting new styles of refrigerators on the market for 1893. In these the carving is changed from the old style spindle work to conventional designs cut in the solid wood. They have also replaced the iron hinges with false ornaments by solid bronze surface hinges made at their foundry. The interior arrangement of the refrigerator is so made, it is stated, that not a nail head shows in the zinc work. For insulation charcoal filling is used, and as an extra safeguard against its settling down, an extra lining of heavy wool felt. The wool felt is nailed on the outside of the inside box. Their line of sideboard tops for refrigerators is referred to as artistic, and as not only useful, but highly ornamental, only the best bevel plate glass being used in these tops.

The company advise us that advertising matter for agents is in course of preparation, and will be of an attractive and ornamental character; a blue enamel sign to go under the window sill is one feature, a complete catalogue in miniature is another, also new designs in picture cards and show cards.

Corrugated Bit Brace Ring.

The American Bit-Brace & Tool Company, Buffalo, N. Y., are fitting braces with a corrugated ratchet ring, as shown

Fig. 1.—Corrugated Bit-Brace Ring.

in Fig. 1. The ring is different from the knurled ring, in having the outside surface corrugated, designed to enable a firmer grip to be obtained. The manufacturers claim that this form of ring is an advantage to mechanics whose hands are moist from perspiration or other causes, greasy, or when they are obliged to wear

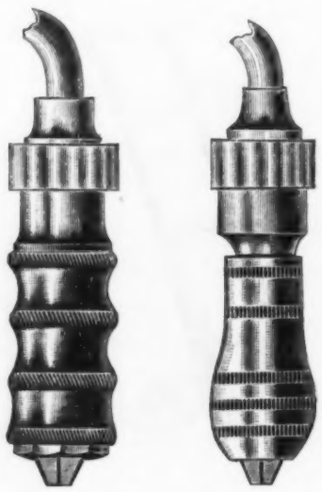


Fig. 2.—Corrugated Ring on Braces.

gloves, and that a firm grip is assured under all conditions. The position and appearance of the ring on braces is shown in Fig. 2. The makers recommend these braces to carpenters, mechanics, linemen and artisans.

The wheat harvest in California promises at least an average crop of about 1,200,000 tons.

Current Hardware Prices.

FEBRUARY 22, 1893.

Note.—The quotations given below represent the Current Hardware Prices which prevail in the market at large. They are not given as manufacturers' prices, and manufacturers should not be held responsible for them. In cases where goods are quoted at lower figures than the manufacturers name, it is no stated that the manufacturers are selling at the prices quoted, but simply that the goods are being sold, perhaps by the manufacturers, perhaps by the jobber at the figures named.

The character @ is used to indicate a range of price; thus discount 50&10@50&10&5 % signifies that the goods in question are sold at prices ranging from discount 50 and 10 % to discount 50 and 10 and 5 %.

Adjusters, Blind—

Domestic.....₩ doz $3.00, 33⅓%
Excelsior....₩ doz $10.00.....50&10&2%
North's.....list net @ 10%
Zimmerman's—See Fasteners Blind.

Ammunition—See *Caps, Cartridges, Shells, &c.*

Anvils—

Eagle Anvils, ₩ ℔ 9¢..... 15@15&5%
Peter Wright's.....11@11½%
Armitage's Mouse Hole.....10¾@11¢
Am. Wrought, Horse shoe brand.11@11½¢
Trenton.....10@10½¢
Wilkinson's.....10¼@11¢
Moore & Barnes Mfg. Co.....33⅓%

Anvil Vise and Drill—

Millers Falls Co., $18.00.....20%
Cheney Anvil and Vise.....25%
Allen Anvil and Vise. $3.00.....40&10%
Star.....45&5%

Apple Parers—See *Parers Apple, &c.*

Augers and Bits—

Douglass Mfg. Co.
Wm. A. Ives & Co.
Humphreyaville Mfg. Co.
French, Swift & Co. (F. H. Beecher) } 75 %
P. S. & W. Co.
Rockford Bit Company.
Cook's, Douglass Mfg. Co.....55%
Cook's, N. H. Copper Co.....60%
Ives' Circular Lip.....60%
Patent Solid Head.....30%
C. E. Jennings & Co., No. 10, extension lip.....40%
C. E. Jennings & Co., No. 30.....60%
C. E. Jennings & Co., Auger Bits, ₩ set, 32¼ quarters, No. 5, $5; No. 30, $3.50.25%
Lewis' Patent Single twist.....45%
Russell Jennings' Augers and Bits.25&10%
Imitation Jennings' Bits.....60@60&10%
Pugh's Black.....20%
Pugh's Jennings Pattern.....30%
Car Bits.....60@60&10
Car Bits, P. S. & W. Co.....60&10
Snell's Car Bits.....60%
L'Hommedieu Car Bits.....15&10%
Dorstner Pat. Auger Bits.....20%
Cincinnati Bell-Hangers' Bits.....30&10

Bit Stock Drills—

Morse Twist Drills.....50&10&5%
Standard.....50&10&5%
Cleveland.....50&10&5%
Syracuse, for metal.....50&10%
Syracuse, for wood (wood list).30@30&5%
Cincinnati, for wood.....30&10%
Cincinnati, for metal.....45&10%

Expansive Bits—

Clark's small, $18; large, $26..35@35&10%
Ives' No. 4, ₩ doz. $60.....40%
Swan's.....40%
Steer's, No. 1, $26; No. 2, $22.....35%
Stearns' No. 2, $48.....20%

Gimlet Bits—

Common.....₩ gross $2.75@$3.25
Diamond.....₩ doz $1.20....40&10%
Bee.....25@25&5%
Double Cut, Shepardson's.....45@45&10%
Double Cut, Ct. Valley Mfg. Co...30&10%
Double Cut, Hartwell's, ₩ gro., $5.00..25%
Double Cut, Douglass'.....40&10%
Double Cut, Ives.....60@60&10%

Hollow Augers—

Ives'.
French, Swift & Co. } 33⅓@33⅓ &10%
Douglass'.
Bonney's Adjustable, ₩ doz $48.....50%
Stearns'.....20&10%
Ives' Expansive, each $4.50.....50&5%
Universal Expansive, each $4.50.....20%
Wood's.....25@25&10%
Cincinnati Adjustable.....25&10%
Cincinnati Standard.....25&10%

Ship Augers and Bits—

L'Hommedieu's.....15&10@15&10&5%
Watrous'.....25@25&10%
Snell's.....15&10@15&10&5%
Snell's Ship Auger Patt'n Car Bits, 15&10@15&10&5%

Awl Hafts—See *Hafts, Awl.*

Awls—

Awls, Sewing, Common....₩ gr. 85¢@90¢
Awls, Should. Peg.....₩ gr. $1.50@$1.55
Awls, Pat. Peg.....₩ gr. 35¢@38¢
Awls, Shouldered Brad..₩ gr. $1.30@ 1.40
Awls, Handled Brad....₩ gr. $2.50@$3.00
Awls, Handled Scratch..₩ gr. $4.00@4.50
Awls, Socket Scratch..₩ doz. $1.10@$1.20

Awl and Tool Sets—See *Sets, Awl and Tool.*

Axes—

	Plain.	Beveled.
First quality, best brands.	$7.00	$7.50
First qual., other brands	6.50 to 6.75	7.00
Second quality	5.50	6.00

Axle Grease—See *Grease, Axle.*

Axles—

No. 1....3¼@4¼¢, No. 2, 5¢@6¢
Nos. 7 to 14.....60&10%
Nos. 15 to 18.....47½% } 3% cash
Nos. 19 to 22.....70%
Concord Axles, loose collar.....4½@6¢
Concord Axles, solid collar.....5½@7¢
National Tubular elf Oiling..... 33⅓%@33⅓&5%

Bag Holders—See *Holders, Bag.*

Balances—

Spring Balances.....40%

	No. 2000	20	30
Chatillon, ₩ doz.....	$0.80	0.95	1.75 net

Chatillon Straight Balances.....40%
Chatillon Circular Balances..... 50&10%

Barb Wire.—See *Wire, Barb.*

Bars—

Crow—

Cast Steel.....₩ ℔ 3½¢
Iron, Steel Points.....₩ ℔ 3¢

Basins, Wash—

Standard Fiberware, No. 1, 10¼ inch, $2; 12-inch, $2.25 13¼-inch, $2.75; 15-inch, $3.25.

Beams, Scale—

Scale Beams, List Jan. 12, '82..50&10@50&10&5%
Chatillon's No. 1.....40%
Chatillon's No. 2.....50%
Custer's.....33⅓%

Beaters—

Egg—

Dover.....₩ doz $1.00@$1.20
Duplex (Standard Co.).....₩ doz $1.00
Dover (Standard Co.).....₩ doz $1.00
Duplex Extra Heavy (Standard Co.)... ₩ doz. $3.50
Bryant's.....₩ gross $14.00
Double (H. & R. Mfg. Co.), ₩ gro., No. 0 $12.00; No. 1, $15.00; No. 2.....$36.00
Easy (H. & R. Mfg. Co.).....₩ gro $12.00
Triple (H. & R. Mfg. Co.).....₩ gro $16.50
Spiral.....₩ gro $4.25 @ $4.50
Improved Acme (H. & R. Mfg. Co.)..... ₩ gro. $9.00
Paine, Diehl & Co.'s .....₩ gro. $24.00
Silver & Co..... .....₩ doz $5.50

Culinary—

Keystone, P. D. & Co., Each, No. 1, $1; No. 2, $2 .....20%

Bells—

Cow—

Common Wrought.....60&10%
Western, Sargent's list.....70&10%
Kentucky, "Star".....20&10%
Kentucky, Sargent's list.....70&10%
Kentucky Durham.....70&10%
Dodge, Genuine Kentucky.....70@70&10%
Texas Star .....50&10@50&10&5%

Door—

Gong, Abbe's.....33⅓&10%
Gong, Yankee.....45&10%
Gong, Barton's .....40&10@50%
Crank, Brooks'.....50&10&2%
Crank, Cone's.....10%
Crank, Connel's.....20&10%
Lever, Sargent's.....60&10%
Lever, Taylor's Bronzed or Plated....net
Lever, Taylor's Japanned.....25&10%
Lever, R. & E. Mfg. Co.'s.. .....50&10&2%
Pull, Brook's.....50&10&2%

Electric—

Woilensak's..... .....20%
Bigelow & Dowse.....20%

Hand—

Light Brass.....70&10@70&10&5%
Extra Heavy.....70%
White.....70%
Silver Chime.....33⅓&10%
Globe Cone's Patent).....25&10@35%

Miscellaneous

Call.....45@50%
Farm Bells.....₩ ℔ 3¢&3½¢
Steel Alloy Church and School Bells..40%

Bellows—

Blacksmiths'.....60&10&5@60&10&10%
Molders'.....40&10@50%
Hand Bellows.....40&10@50%

Belting, Rubber—

Common Standard.....70@10@75&5%
Standard.....70&5@70&10%
Extra.....60&10@60&10&5%
N.Y.B.&P. Co., Carbon.....60%
N.Y.B.&P.Co., Diamond.....50%
N.Y.B.&P.Co., Para.....40%

Bench Stops—See *Stops, Bench*

Benders and Upsetters, Tire—

Stoddard's Lightning Tire Upsetters..15%
Detroit Perfected Tire Bender.....15%
Green River Tire Benders and Upsetters.....20%

Bits—

Auger, Gimlet, Bit Stock Drills, &c., see *Augers and Bits.*

Bit Holders—See *Holders.*

Blind Adjusters—See *Adjusters, Blind.*

Blind Fasteners—See *Fasteners, Blind.*

Blind Staples—See *Staples, Blind.*

Blocks—

Cleveland Block Co., Mal. Iron.50@50&10%
Moore's Novelty, Mal. Iron.....50%
Sur Grip Steel Tackle Blocks.... .....25%

Bolts—

Carriage, Machine, &c.—

Com. list June 10, '84.....75&10&5@80%
Genuine Eagle, Norway, list Oct. '84..... 80&5@80&10%
Eagle, Norway, list Oct. '84 80&10@80&15
Phila. pattern, list Oct. 7, '84..... 80%
R.B.&W., old list.....70%
Machine, list Jan. 1, 1890.....80&10%
Bolt Ends, list Jan. 1, 1890.....80&10%

Door and Shutter—

Cast Iron Barrel, Square, &c.....70&10%
Cast Iron Shutter Bolts.....70&10%
Cast Iron Chain (Sargent's list)....65&10%
Ives' Patent Door Bolts..60&10@60&10&5%
Wrought Barrel.....70&10@75%
Wrought Square.....70&10@75%
Wr't Shutter, all Iron, Stanley's..... 60&10@60&10&10%
Wr't Shutter, Brass Knob.....50@50&5%
Wr't Shutter, Sargent's list.....50&10%
Wr't Sunk Flush, Sargent's list.....60&10%
Wr't Sunk Flush, Stanley's list.50&10&5%
Wr't B. K.Flush, Common.....55&10%

Stove and Plow—

Stove.....60&10@60&10&5%
Plow.....60&10&50@60&10&10%
R. B. & W., Plow..... .....55%

Tire—

Common, list Feb. 28, '83.....65@65&5%
Port Chester Bolt and Nut Company:
Empire list Feb. 28, '83.....65%
Keystone, Philadel., list Oct. '84.....80%
Norway, Phila., list Oct. '84.....75%
American Screw Company
Norway, Phila., list Oct. 16, '84.....75%
Eagle, Phila., list Oct. 16, '84.....80%
Philadel., list Oct. 16, '84.....80%
Bay State, list Feb. 28, '83.....80%
R. B. & W., Philadel., list Oct. 16, '84..80%

Borers, Tap—

Common and Ring.....20&10%
Ives' Tap Borers.....33⅓&5%
Enterprise Mfg. Co.....20%
Clark's.....33⅓@35%

Borax—

Per ℔.....9¼@10¼¢

Boring Machines—See *Machines, Boring.*

Bow Pins—See *Pins, Bow.*

Boxes, Wagon—

Per ℔.....2¾¢

Braces—

American Bit Brace and Tool Co..
Nos. 10, 12, 20.....60&10%
Nos. 11, 21, 24, 27.....70&10%
Nos. 22, 23, 25.....60&10&5%
Nos. 13, 26, 36, 37 .....70&10&5
Amidon's,
Barker's Imp'd Plain.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet.....75&10@80%
Eclipse Ratchet.....60%
Globe Jawed.....40@40&10%
Corner Brace.....40@40&10%
Universal, 8 in., $2.10; 10 in.....$2.25
Buffalo Ball.....$1.10@$1.15
Barber s.....50&10%
Saxton's,
Barker's Imp. Polished.....75&10@80%
Barker's Imp. Nickeled.....65&10@70%
Ratchet, Polished.....50&10@60%
Ratchet, Nickeled.....40&10@50%
Buffalo Ball.....net, $1.10@$1.15
Bartholomew s,
Nos. 25, 27 and 30.....50&10@60&5%
Nos. 117, 118, 119.....70@70&5%
Common Ball, American.....$1.00@$1.10
Fray's Genuine Spofford s...50&5@50&10%
Fray's Nos. 70 to 120, 81 to 123, 207 to 414 50&10%
Ives' New Haven Novelty.....70@70&5%
New Haven Ratchet.....60&5@60&10%
Barber Ratchet.....60&5@60&10%
Barber's.....60&5%
Spofford.....60&5@60&10%
P. S. & W. Co., Peck's Patent.....60%

Brackets—

Shelf, plain,
Regular, list.....65@70%
Sargent's list.....60&10@70&10%
Shelf, fancy,
Sargent's list.....70@70&10%
Other makes at a wide range of prices.
Bradley Shelf Brackets.....70&10%

Bright Wire Goods—See *Wire.*

Broilers—

Henis' Self-Basting.	Inch.....	9	10	9x11
	Per doz...	$4.50	5.50	6.50

New Haven.....50%
Wire Goods Co.....65&10%
Morgan Odorless.....₩ doz. $12. 50%
Queen City.....33⅓%

Buckets, Well—

Galvanized—

Hill's.....₩ doz. 12 qt. $4.25; 14 qt. $5.25
Iron Clad.....₩ doz. 14 qt. $4.25@4.50
Helwig's Flat Iron Band.....$3.75
Helwig's Wired Top.....₩ doz $4.00

Bull Rings—See *Rings, Bull.*

Butcher's Cleavers—See *Cleavers, Butchers'.*

Butts—

Brass—

Wrought Brass.....80@80&10%
Cast Brass, Tiebout's.....50%
Cast Brass, Fast.....33⅓&10%
Cast Brass, Loose Joint.....33⅓&10%

Cast Iron—

Fast Joint, Narrow.....50&10&5@60%
Fast Joint, Broad.....50&10@60%
Loose Joint.
Loose Joint, Japanned.
Loose Joint, Jap. with Acorns..
Parliament Butts. } 75@75 &10%
Mayer's Hinges.
Loose Pin, Acorns.
Loose Pin, Acorns, Japanned...
Loose Pin, Acorns, Japanned, Plated Tips..

Wrought Steel—

Fast Joint, Narrow.
Fast Joint, Lt. Narrow.
Fast Joint, Broad.
Loose Joint, Broad. } List Jan. 2 1893, 40@40&10%
Table Butts, Back Flaps, &c.....
Inside Blind, Regular.
Indide Blind, Light.
Loose Pin.
Bronzed Wrought Butts. .....50@50&10%

Calipers—See *Compasses.*

Calks, Toe—

Gautier, One Prong, Blunt.....5½@6¢
Burke's One Prong, Blunt.....5½@6¢
Burke's, Two Prong, Blunt.....7½@8¢
Burke's, One Prong, Sharp... .....6½@7¢

Can Openers—See *Openers, Can.*

Cans, Milk—

S. S. & Co.: 5-gal., $2.10; 8-gal., $3.10; 10-gal., $3.35 each..... ..... 25%

Caps—

Percussion—

Hicks & Goldmark's and Union Metallic Cartridge Co. ₩ 1000
F. L. Waterproof, 1-10's.....35@37¢
E. B. Trimmed Edge, 1-10's.....47@50¢
E. B. Grnd. Edge, Cent. Fire, 1-10's.... 47@50¢
Musket, Waterproof, 1-10's.....50@55¢
G. D.....27@30¢
S. B. Genuine Imported.....45¢
Eley's E. B.....50@55¢
Eley's D Waterproof, Central Fire..$1.00

Primers—

Berdan Primers, $1.00.....25
B. L. Caps (Sturtevant Shells) $1.00....25
All other Primers, $1.20.....25

Cards—

Watson's Cotton, Wool, Horse and File, list January 28, 1891.. ..... 25%

Carpet Stretchers—See *Stretchers, Carpet.*

Cartridges—

Rim Fire Cartridges. .....50&5&2%
Rim Fire Military.....15&2%
Cent. Fire, Pistol and Rifle.....25&5&2%
Cent. Fire, Military and Sporting 15&5&2%
Blank Cartridges, except 22 and 32 cal., additional 10% to above discounts.
Blank Cartridges, 22 cal., $1.75.....2%
Blank Cartridges, 32 cal., $3.50.....2%
Primed Shells and Bullets.....15&5&2%
B. B. Caps, Round Ball, $1.75.....2%
B. B. Caps, Con. Ball, Swgd., $2.00.....2%
Oneida Halter Chain.....60@60&25%
Galvanized Pump Chain.....₩ ℔ 5½@6¢
Jack Chain, Iron.....80&10%
Jack Chain, Brass.....30%

Carpet Sweepers—See *Sweepers, Carpet.*

Casters—

Bed. } Brass.....55@55&10%
Plate. } Others....60@60&10%
Shallow Socket.
Deep Socket.....40&10%
Yale Casters, low list.....45%
Yale, Gem.....70%
Martin's Patent (Phœnix).45&10@50&10%
Payson's Anti-friction.....70@70&10%
Payson's Truck.....60@60&10%
Giant Truck Casters.....35%
Stationary Truck Casters.....50&10%
Socket Truck Casters.....50@50&10%
Gwinner's Common Sense.....45%
Gwinner's Hercules.....45%

Cattle Leaders—See *Leaders, Cattle.*

Cement—

Victor Elastic.....5 ℔ pails ₩ ℔ 5¢

Chain—

Trace, Wagon and Fancy Chains, List revised Oct. 15, 1892.. .60@60&10%
American Coil, in cask lots,

3-16	¼	5-16	⅜	7-16	½	⅝	¾
$7.60	5.30	4.45	3.80	3.65	3.50	3.40	3.30

Less than cask lots, add½@1¢ ₩ ℔
German Coil, list July 12, 1892 60@60&10%
German Halter Chain, list July 12, 1892. 60@60&10%
Covert Halter.....60&2%
Covert Traces.....35&2%
Covert Heel Chain.....50&2%

Chalk—

White, case lots, ₩ gr 50¢, small lots.55¢
Red, case lots....₩ gr 67¢ small lots.75¢
Blue, case lots....₩ gr 75¢; small lots 90¢
See also Crayons

Chalk Lines—See *Lines.*

Chisels—

Socket Framing and Firmer

P. S. & W. ..... }
New Haven ..... }
Witherby ..... } .75&10@75&10&5%
Mix ..... }
Ohio Tool Co. ..... }
Douglass ..... 75@75&5%
Buck Bros. 30%
Merrill ..... 60&10@60&10&5%
L. & I. J. White ..... 30@30&5%

Tanged and Miscellaneous.

Tanged Firmers ..... 50@50&10%
Butchers' ..... $4.75@$5.00
Spear & Jackson's ..... $5 to £
Buck Bros. 30%
Cold Chisels, ₱ lb. ..... 15@16¢

Chucks—

Beach Pat. ..... each, $8.00 ..... 20%
Morse's Adjustable, each, $7.00, 20@20&5%
Danbury ..... each, $6.00, 30@30&5%
Syracuse, Balz Pat. 25%
Graham Patent 33⅓%
Skinner's Patent Chucks.
Combination Lathe Chucks 33⅓%
Universal Lathe Chucks 40%
Independent Lathe Chucks 40%
Drill Chucks 15%
Union Mfg. Co.
Victor $8.50, 25%
Combination 40%
Universal 40%
Independent 40%

Churns—

Tiffin Union, each, 5 gal. $3.25; 7 gal., $3.75; 10 gal., $4.25.
McDermaid Star Barrel Churn, each 6 gal., $2.60; 10 gal., $2.75; 15 gal., $3.00; 20 gal., $3.25.

Clamps—

R. I. Tool Co.'s Wrought Iron 25%
Adjustable, Cincinnati ..... 15&10%
Adjustable, Hammers ..... 15@15&5%
Adjustable, Stearn's ..... 30@30&10%
Stearn's Adjustable Cabinet and Corner ..... 30@30&10%
Cabinet, Sargent's ..... 70&10%
Carriage Makers', sargent's ..... 75@75&5%
Carriage Makers', P., S. & W Co ..... 40&10%
Eberhard Mfg. Co ..... 40&5@40&10%
Warner's ..... 40&10@40&10&5%
Saw Clamps, see Vises, Saw Filers'.
Carpenter's, Cincinnati ..... 25&10%

Cleavers, Butchers'—

Bradley's ..... 25@30%
L. & I. J. White ..... 20&5%
Beatty's ..... 40@40&5%
New Haven Edge Tool Co.'s 40%
P., S. & W ..... 33⅓&5@33⅓&10%
Foster Bros 30%
Schulte, Lohoff & Co ..... 40@40&5%

Clips—

Norway, Axle, ¼ & 5-16 ..... 55&5&5%
2d grade Norway Axle, ¼ & 5-16 ..... 65&5%
Superior Axle Clips ..... 60%&5@70%
Norway Spring Bar Clips, 5-16 ..... 60&5&5%
Wrought Iron Felloe Clips ..... ₱ lb., 5½¢
Steel Felloe Clips ..... ₱ lb., 5¢
Baker Axle Clips 25%

Cloth and Netting, Wire—See *Wire, &c.*

Cockeyes 50%

Cocks Brass—

Hardware list ..... 60@2%

Coffee Mills—See *Mills, Coffee.*

Collars, Dog—

Chapman Mfg. Company ..... 50&10@60%
Medford Fancy Goods Co ..... 40&10@50%
Embossed, Gilt, Pope & Steven's list, 30&10%
Leather, Pope & Steven's list 40%
Brass, Pope & Steven's list 40%

Combs, Curry—

Fitch's ..... 50&10@50&10&10%
Rubber, per doz., $10.00 ..... 25%
American Curry Comb Co. ..... 33⅓@40%
Kohler's Magic Oscillating. ₱ doz., $2.00
Kohler's Humane ..... ₱ doz., $1.75

Compasses, Dividers, &c.

Compasses, Calipers, Dividers. 70@70&10%
Bemis & Call Co.'s
Dividers 65%
Compasses ..... 50&5%
Calipers, Wing and Inside or Outside. 50&5%
Calipers, Double 60%
Calipers, Call's Patent Inside 30%
Excelsior 50%
J. Stevens & Co.'s ..... 25&10%
Starrett's
Spring Calipers and Dividers ..... 25&10%
Lock Calipers and Dividers 25%
Combination Dividers 25%

Coolers, Water—

S. S. & Co.: 2-gal., $2 30; 3-gal., $2.60; 4-gal., $3 00; 6-gal., $3.75 each 33⅓%

Coopers' Tools—See *Tools, Coopers'.*

Cord—

Sash—

Common ..... ₱ lb., 9@10¢
Patent, good quality ..... ₱ lb., 11@12¢
White Cotton Braided, fair ..... ₱ lb., 24@25¢
Common Russia Sash ..... ₱ lb., 12½@13¢
Patent Russia Sash ..... ₱ lb., 13¾@ 14¢
Cable Laid Italian Sash ..... ₱ lb., 16@20¢
India Cable Laid Sash ..... ₱ lb., 11½@12¢
Silver Lake—
A quality, White, 50¢ 25%
A quality, Drab, 55¢ 25%
B quality, White, 30¢ 10%
B quality, Drab, 35¢ 10%
Sylvan Spring, Extra Braided, White. 34¢
Sylvan Spring, Extra Braided, Drab. 39¢
Semper Idem, Braided, White ..... 27@28¢
Egyptian, India Hemp, Braided ..... 26¢
Massachusetts, White ..... 29¢
Samson—
Braided, White Cotton ..... ₱ lb., 37¢
Braided, Drab Cotton ..... ₱ lb., 42¢
Braided, Italian Hemp ..... ₱ lb., 40¢
Braided, Linen ..... ₱ lb., 56¢
Tate's Solid Braided—
Hercules, White ..... ₱ lb., 25¢
Hercules, Drab ..... ₱ lb., 30¢
Economy, Drab ..... ₱ lb., 27¢
Economy, White ..... ₱ lb., 22¢
Cassawan Mills—
Braided, Giant, White, ₱ lb., 30¢ 20%
Braided, Giant, Drab and Fancy, ₱ lb. 35¢ 10%
Braided, Crown White, ₱ lb., 50¢ 50%
Braided, Crown Drab and Fancy, ₱ lb. 50¢ 30%

Wire Picture—

Braided or Twisted ..... 80&5@80&15%

Corkscrews—See *Screws, Cork.*

Corn Knives and Cutters—See *Knives, Corn.*

Crackers, Nut—

Table (H. & B. Mfg. Co) 40%
Blake's Pattern, ₱ doz., $2.00 ..... 10%
Turner & Seymour Mfg. Co 50%
Acme.
Japanned, ₱ gro., $30 ..... 50%
Nickel Plated, ₱ gro. $30 ..... 10%

Cradles—

Grain ..... 50&5&2@50&10&2%

Crayons—

White Crayons, ₱ gross ..... 7@8¢
D. M. Stewart Mfg. Co., Metal Workers', ₱ gross, $2.50 ..... 25%
D. M. Stewart Mfg. Co., Rolling Mill, ₱ gross, $2.50 ..... 25%
See also *Chalk.*

Creamery Pails—See *Pails, Creamery.*

Crow Bars—See *Bars, Crow.*

Curry Combs—See *Combs, Curry.*

Curtain Pins—See *Pins, Curtain.*

Cutters—

Meat—

Dixon's, ₱ doz ..... 40&5%

Nos.	1	2	3	4
	$14.00	$17.00	$19.00	$30.00

Woodruff's, ₱ doz ..... 40&5%

Nos.	100	150
	$15.00	$18.00

Hale's Pattern, ₱ doz ..... 70@70&5%

Nos.	11	12	13
	$27.00	$33.00	$45.00

American 50%

Nos.	1	2	3	4	5	6
Each	$6	$7	$10	$25	$50	$90

Enterprise 25%

Nos.	10	12	22	32	42
Each	$3	$2.50	$4	$6	$15

Great American Meat Cutter ..30@30&5%

Nos.	112	116	118	120	122
Each	$2.00	$2.75	$3.00	$3.50	$4.00

Miles' Challenge, ₱ doz ..... 45@45&10%

Nos.	1	2	3
	$22.00	$30.00	$40.00

Home No. 1, ₱ doz., $26.00 ..... 55&10%
Draw Cut, each:

Nos.	5	6	8
	$75	$80	$225

Beef Shavers (Enterprise) 20%
Little Giant (P. S. & W. Co.) 50%
Chadborn's Smoked Beef Cutter, ₱ doz., $66.00

Tobacco

Champion ..... 20&10@30%
All Iron ..... ₱ doz., $4.25
Nashua Lock Co.'s ..₱ doz., $18.00, 50@55%
Wilson's 55%
Sargent's ..... ₱ doz., $24.00, 55&10
Acme ..... ₱ doz., $20.00, 40%

Washer—

Smith's Pat ..... ₱ doz., $12.00, 20&10&10%
Johnson's ..... ₱ doz., $11.00, 33⅓%
Penny's ..₱ doz., Pol. $14; Jap'd, $16, 55%
Appleton's ..... ₱ doz., $16.00, 60&10%
Bonney's ..... 30&10%
Cincinnati ..... 25&10%

Dampers, &c.—

Dampers, Buffalo ..... 40&10%
Buffalo Damper Clips ..... 40&10%
Crown Damper 40%
Excelsior ..... 40&10%

Diggers, Post Hole, &c.—

Samson, ₱ doz., $34.00 ..... 25@25&10%
Fletcher Post Hole Augers, ₱ doz., $36.00, 20@20&10%
Eureka Diggers ..... ₱ doz. $12.00@$13.00
Vaughan's Post Hole Auger, ₱ doz., $8.50@$9.50
Kohler's Little Giant ..... ₱ doz., $18.00
Kohler's Hercules ..... ₱ doz., $14.00
Kohler's Invincible ..... ₱ doz., $12.00
Kohler's New Champion ..... ₱ doz., $8.00
Scheidler ..... ₱ doz., $18.00
Cronk's Post Bars, ₱ doz., $60.00, 50&5@50&10%
Gibb's Post Hole Digger ..... ₱ doz., $15.00
Gibbs' National ..... ₱ doz., $12.00
Gibbs' Columbia ..... ₱ doz., $13.00
Gibbs' Imperial ..... ₱ doz., $7.50
Shimer's Hollow Handle.. ₱ doz., $24.00, 50%

Dividers—See *Compasses.*

Dog Collars—See *Collars, Dog.*

Door Springs—See *Springs, Door.*

Drawers.

Money, ₱ doz ..... $18@$20

Drawing Knives—See *Knives, Drawing.*

Drills and Drill Stocks—

Blacksmiths' ..... each $1.75
Blacksmiths' Self-Feeding, each $7.50, 20%
Breast, P. S. & W ..... 40&10%
Breast, Wilson's ..... 30&5%
Breast, Millers Falls ..... each $3.00, 25%
Breast, Bartholomew's ..... each $2.50 25&10@40%
Ratchet, Merrill's ..... 20@20&5%
Ratchet, Ingersoll's 25%
Ratchet, Parker's ..... 20@20&5%
Ratchet, Whitney's ..... 20&10%
Ratchet, Weston's ..... 20@25%
Ratchet, Moore's Triple Action ..... 25@30%
Ratchet, Curtis & Curtis 30%
Whitneys Hand Drill, Plain, $11.00; Adjustable, $12.00 ..... 20&10%
Wilson's Drill Stocks 10%
Automatic Boring Tools ..... $1.75@$1.85
Chicopee Automatic Drill ..... 20&10%

Twist Drills—

Cleveland ..... 50&10&10%
Diamond, W. & B ..... 50&10&10%
Graham's Pat. Groove Shank ..... 50&10&10%
Morse ..... 50&10&10%
New Process ..... 50&10&10%
Standard ..... 50&10&10%
Syracuse (Meta list) ..... 50&10%

Drill Bits or Bit Stock Drills—See *Augers and Bits.*

Drill Chucks—See *Chucks.*

Dripping Pans—See *Pans, Dripping.*

Drivers, Screw—

Douglass Mfg. Co ..... 20@20&10%
Disston's 50%
Buck Bros. 30%
Stanley R. & L. Co.'s
No. 64, Varnished Handles ..... 65&10%
No. 86 ..... 70&10%
Sargent & Co.'s
No. 1, Forged Blade ..... 60&10&10%
Nos. 20, 40 and 60 ..... 66⅔&10&10%
P. S. & W 70%
Knapp & Cowles
No. 1 ..... 60&20@70%
No. 2 ..... 60&10&10@70&5%
No. 3 ..... 60&5@60&10%
Nos. 4 and 00, Acme and Ideal .. 50&5@50&10&5%
Stearns' ..... 25&10&5%
Gay & Parsons 35%
Champion ..... 25&10%
Clark's Pat ..... 30@33⅓%
Crawford's Adjustable 30%
Ellrich's Socket and Ratchet .. 25@25&10%
Allard's Spiral, new list 25%
Kolb's Common Sense .. ₱ doz., $6.00, 25&10%
Syracuse Screw-Driver Bits ..... 30&30&5%
Screw Driver Bits, Parr's ..... ₱ doz., 50@75¢
Screw Driver Bitts, Parr's .. ₱ gross, $6.25
Fray's Hol. H'dle Sets ..... No. 3, $12.00, 45%
P. D. & Co.'s All Steel 50%
Cincinnati ..... 25&10%
Brace Screw Drivers ..... 25&10%
Buck Bros.' Screw Driver Bits ..... 27½&5%
Goodell's Automatic 50%
Mayhew's Black Handle 50%
Mayhew's Monarch ..... 45&10%
C. T. Williamson Wire Novelty Co 50%

Egg Beaters—See *Beaters, Egg*

Egg Poachers—See *Poachers, Egg.*

Electric Bell Sets—See *Bells, Electric.*

Emery—No. 4 to No. 54 to Flour, CF-FF.

	46 gr.	150 gr.	F.FF.
Kegs, ₱ lb	4½¢	5 ¢	2½¢
½ kegs, ₱ lb	4¾¢	5½¢	2¾¢
¼ kegs, ₱ lb	5 ¢	5¾¢	3 ¢
10-₱ cans, 10 in case	6 ¢	6¼¢	5 ¢
10-lb cans, less than 10	10 ¢	10 ¢	7¼¢

Enameled and Tinned Ware—See *Ware, Hollow.*

Escutcheon Pins—See *Pins, Escutcheon.*

Escutcheons—

Door Lock ..... Same dis. as Door Locks.
Brass Thread ..... 60@60&10%
Wood 25%

Expanded Metal—List No. 5.

Lathing 10%
Fencing, Painted Sheets 20%
Netting, Painted Sheets 20%
Door Mats, Galvanized 25%
Window Guards, Paneled 15%
Tree Guards, Paneled 15%

Extractors, Lemon Juice—See *Squeezers, Lemon.*

Fasteners, Blind—

Mackrell's, ₱ doz., $1.00 ..... 20@20&10%
Van Sand's Screw Pat, $15 ₱ gr.. 60&10%
Van Sand's Old Pat., $15 ₱ gr ..... 55&10%
Austin & Eddy No. 2008 ..... ₱ gr., $9.00
Security Gravity ..... ₱ gr., $9.00
Zimmerman's ..... 50&10%

Faucets—

Fenn's 40%
Bohren's Pat. Rubber Ball 25%
Fenn's Cork Stops 33⅓%
Star 60%
Frary's Pat. Petroleum 60%
B. & L. B. Co.
West's Lock, Open and Shut Key .. 50%
Star, Metal Plug, new list 40%
Lockport, Metal Plug, reduced list .. 60%
Metallic Key, Leather Lined .. 60&10@60&10&10%
Cork Lined ..... 70&5@70&10%
Burnside's Red Cedar 50%
Burnside's Red Cedar, bbl. lots .. 50&10%
John Sommers'
Peerless Best Block Tin Key 40%
IXL, 1st quality, Cork Lined 50%
Diamond Lock 40%
Perfection, Fla. Red Cedar (in boxes) 40%
Boss Metallic Key 50%
Reliable Cork Lined 60%
O. K. Western Pattern Cork Lined .. 50%
No Brand, Red Cedar (in bbls.) .. 50&20%
Western Pattern Metal Key 40%
No Brand Metal Key 60%
Self Measuring
Enterprise, ₱ doz., $36.00 ..... 20%
Lane's ₱ doz., $36.00 ..... 25&10%
Victor ..... ₱ doz., $36.00 25&10%

Felloe Plates—See *Plates, Felloe.*

Fibre Ware—See *Ware Fibre.*

Fifth Wheels—

Derby and Cincinnati ..... 45&5%
Brewster ..... 50&5%

Files—

Domestic—

Nicholson Files, Rasps, &c. 60&10&5@60&10&10%
Nicholson (X.F.) Files 25%
Nicholson's Royal Files (Seconds) ..... 75% (extra prices on certain sizes.)
American ..... 66⅔&10@66⅔&10&5%
G. & H. Barnett (Black Diamond) 60&10@60&10&5%
Arcade ..... 60&10&10@70%
Eagle ..... 60&10&10@70%
Other makers, best brands .. 60&10&5@70%
Fair brands ..... 70@70&10%
Second quality ..... 75@75&10&5%
Heller's Horse Rasps ..... 50&7½@50&10%
McCaffrey's Horse Rasps ..... 50&10%
Chelsea Horse Rasps, Hand Cut .. 50&10%
Arcade Horse Rasps ..... 60&10@60&10&5%

Imported—

Butcher ..... Butcher's list, 20%
Stubs ..... Stubs list, 25@30%

Fixtures, Grindstone—

Sargent's Patent ..... 70&10%
Reading Hardware Co ..... 30&10%
P., S. & W. Co ..... 50&10%

Fluting Machines—See *Machines, Fluting.*

Fluting Scissors—See *Scissors, Fluting.*

Fodder Squeezers—See *Squeezers, Fodder.*

Forks—

Hay, Manure, &c. Asso. List. 70@70&5&2%
Hay, Manure, &c., Phila. List, 60@60&10&2%
Plated, see Spoons.

Frames—

Saw—

White Vermont ..... ₱ gro., $9.00@$10.00
Red, Polished and Varnished ..... ₱ doz., $1.50, 25%

Screen, Window and Door—

Porter's Pat. Window and Door Frame, 33⅓&10%
Warner's Screen Corner Irons 33⅓%
33⅓&10%
Stearns' Frames and Corners .. 25@25&10%
Cortland ..... 40@40&5

Freezers, Ice Cream—

White Mountain ..... 60@60&5%
Granite State ..... 65@65&5%
Arctic ..... 70@70&5%
American 60%
Buffalo Champion ..... 65@65&5%
Shepard's Lightning ..... 65@65&5%
Gem 65%
Blizzard 70%
Double Action Crown 60%
Crown 60%
Star 60%
Peerless ..... 60&10%
Giant 60%
Zero ..... 60&10&10%
Boss and Pet ..... 60&10&10&10%
Keystone, P., D. & Co., each, $1.50 .... 20%
Standard ..... 60@60&5%
Standard Double Action ..... 60@60&5%
Expert ..... 65@65&5%
Model ..... 60@60&5%
Confectioners' Machine 50%

Fruit and Jelly Presses—See *Presses, Fruit and Jelly.*

Fry Pans—See *Pans, Fry.*

Funnels—

Gersdorff's Perfection, Standard and Globe; *Tin*, 1 gro., 10%; 2 to 5 gro., 20%; 5 to 10 gro 30%
Copper, 1 to 6 doz., 15%; 6 to 12 doz., 20%; over 12 doz 25%

Furnaces, Soldering—

Burgess No. 3 Gem tin reservoir $7.00
Burgess No. 3 Gem, Copper reservoir. $8.50

Fuse—Dis. 12½@15%. ₱ 1000 ft.

Common Hemp Fuse, for dry ground. $2.70
Common Cotton Fuse, for dry ground 2.85
Single Taped Fuse, for wet ground.. 3.85
Double Taped Fuse, for very wet gr.. 4.80
Triple Taped Fuse, for very wet gr.. 5.60
Small Gutta Percha Fuse, for water. 7.50
Large Gutta Percha Fuse, for water. 12.00

Gates Molasses—

Stebbin's Pattern ..... 80@80&5%
Stebbin's Genuine ..... 60&10&10%
Stebbin's Tinned Ends ..... 40&10%
Chase's Hard Metal ..... 50&10%
Bush's 20%
Lincoln's Pattern ..... 70&70&10%
Weed's ..... 20&10%
Boss, ₱ doz.:
No. 1, $7; No. 2, $8; No. 3, $9; No. 4, $10 ..... 60&10&10%

Gauges—

Marking, Mortise, &c ..... 60&10%
Starrett's Surface, Center and Scratch. 25&10%
Stanley R. & L. Co.'s Butt and Rabbet Gauge ..... 20&10%
Hoague & Peck's Champion Gauge—
With Scale ..... ₱ doz., $5.00
Without Scale ..... ₱ doz., $4.00
Wire, Wheeler, Madden & Co 10%
Wire, Morse's 25%
Wire, Brown & Sharpe's ..... 10@20%
Wire, P., S. & W. Co ..... 10&10%

Gimlets—

Nail and Spike ..... 50&10&5%
Eureka Gimlets ..... 60&10%
Diamond Gimlets ..... ₱ gr $5.00
Double Cut, Shepardson's ..... 45@45&5%
Doub e Cut, Ives' ..... 60@60&5%
Doub.e Cut, Douglass' ..... 40&10%

Glue—

Ie Page's Liquid ..... 25@25&5%
Upton's Liquid 35%
Improved Process ..... 25@25&5%
Dodd's Liquid Glue ..... 25@25&5%

Glue Pots—See *Pots, Glue.*

Grease, Axle—

Fraser's ..... Keg ₱ lb 4¢, Pail ₱ lb 5¢
Fraser's, in boxes ..... ₱ gr $9.50
Dixon's Everlasting, in bxs. .. ₱ doz 1 lb $1.20; 2 lb $2.00
Dixon's Everlasting .... 10-lb pails, ea. 85¢
Lower grades, special brands, ₱ gr $5.50@$7.00
Axleine, tin boxes ..... ₱ gross $12.00
English Coach, wooden boxes ..... ₱ gross $3.50
English Coach, 5-lb tin pails. ₱ doz. $3.50
Tiger, wooden boxes ..... ₱ gross $7.00
Tiger, 5-lb tin pails ..... ₱ doz $2.85

Grindstones—

Small, less than car load lots at quarry ..... ₱ ton $9.00 @ $10.00
Family, regular list 60%
Family, Cleveland Stone Co 30%

Grindstone Fixtures—See *Fixtures, Grindstone.*

Gun Powder—See *Powder.*

Hack Saws—See *Saws.*

Hafts, Awl—

Sewing, Brass Fer. ₱ gr $1.75
Pat. Sewing, Short. ₱ doz ..... 45@50%
Pat. Sewing, Long ..... ₱ doz $1.50
Pat. Peg, Plain Top. ₱ doz ..... 40@45%
Pat. Peg Leath Top ..... ₱ doz 48@50

Halters—

Covert's, Rope, Jute.....60&10&10&2%
Covert's Rope, 7-16-in., Jute.....70&2%
Covert's Rope, ½-in., Hemp.....50&2%
Covert's Adj. Rope Halters.....40&2%
Covert's Hemp Horse and Cattle Tie, 50&10&2%
Covert's Jute Horse Ties.....70&2%
Covert's Jute Cattle Ties.....70&10&2%
Covert's Adj. Web Halters.....35&5&2%
Covert's Saddlery Works Halters...33⅓&5
Covert's Saddlery Works Horse and Cattle Ties.....33⅓&5

Hammers—

Handled Hammers—

Maydole's, list Dec. 1, '85.....25&10@35%
Buffalo Hammer Co.....
Humason & Beckley.....
Atha Tool Co.....
Verree.....
} ....50&10%
C. Hammond & Son.....40&10@—%
Fayette R. Plumb.
Artisans' Choice, A. E. Nail.....40&10%
Regular Y. & P., A. E. Nail.....50%
Horseshoe Turning Hammers.....50%
Other Hammers.....50&10%
Cheney's Claw.....40&10%
Cheney's Machinist's & Riveting...50&5%
Magnetic Tack, Nos. 1, 2, 3, $1.25, 1.50 & 1.75.....30&10%
Nelson Tool Works.....40&10%
Warner & Nobles, new list.....25&10
Peck, Stow & Wilcox.....35@40%
Sargent's.....40@40&10%

Heavy Hammers and Sledges—

8 ℔ and under...℔ 40¢
8 to 5 ℔.....℔ 36¢
Over 5 ℔.....℔ 30¢
} 75&10@75&10 &5%
Wilkinson's Smiths.....10½¢@11¢℔ ℔

Handcuffs and Leg Irons

—See *Police Goods.*

Handles—

Cross-Cut Saw Handles—

Atkins', new list.....40%
Champion.....15%
Ely's Perfection.....℔ doz., $3.00

Iron, Wrought or Cast—

Door or Thumb.

Nos.	0	1	2	3	4
Per doz.	$0.90	1.00	1.08	1.35	1.50

60&10&10%
Roggin's Latches.....℔ doz 30@35¢
Bronze Iron Drop Latches..℔ doz 70¢ net
Jap'd Store Door Handles—Nuts, $1.62; Plate, $1.10; no plate, $0.88.....net
Barn Door, ℔ doz $1.40.....10&10%
Chest and Lifting.....70@70&10%

Wood—

Saw and Plane.....40&10@50%
Hammer, Hatchet, Axe, &c.....40@40&5%
Brad Awl.....℔ gr $2.00
Hickory Firmer Chisel, ass'd..℔ gr 4.50
Hickory Firmer Chisel, large..℔ gr 5.00
Apple Firmer Chisel, ass'd...℔ gr 5.00
Apple Firmer Chisel, large...℔ gr 6.00
Socket Firmer Chisel, ass'd..℔ gr 3.00
Socket Framing Chisel, ass'd..℔ gr 5.00
J. B. Smith & Co.'s Pat File.....50%
File, assorted.....℔ gr 2.75
Auger, assorted.....℔ gr 5.00
Auger, large.....℔ gr 7.00
} 50%
Pat. Auger, Ives'.....30&10%
Pat. Auger, Douglass.....℔ set $1.25
Pat. Auger, Swan's.....℔ set $1.00
Hoe, Rake, Shovel, &c.....60@60&5%

Hangers—

Barn Door, old patterns.....70@70&5%
Barn Door, New England.....70@70&5%
Samson Steel Anti-Friction.....55%
Orleans Steel.....55%
Hamilton Wrought Steel Track.....55%
Champion.....60&10%
Climax Anti-Friction.....55%
Zenith for Wood Track.....55%
Sterling.....50&10@60%
Victor, No. 1, $15.00; No. 2, $16.50; No. 3, $18.00.....50&2%
Kidder's.....50@50&10%
Boss.....60&10@60&10&5%
Best Anti-Friction.....60&10@60&10&5%
Duplex (Wood Track).....60&10&5%
Terry's Modern.....50&10@50&10&5%
Terry's Ideal.....50&10@50&10&5%
Terry's Solid.....50&10@60%
Terry's Shield.....50&10@60%
Terry's Wrought Single Strap.....50&10%
Cronk's Patent, Steel Covered.....50&10%
Carrier Steel Anti-Friction.....50&10%
Richards'.....30@30&10%
Lane's New Standard.....50@50&5%
Lane's Standard.....50&5@50&10%
Lane's Parlor.....40%
Warner's Pat.....20&10&10%
Stearns' Anti-Friction.....20&10&10%
Stearns' Challenge.....25&10&10%
Cincinnati, Nos. 1, $2.25; 3, $2.50; 4, $2.5.
Paragon, Nos. 5, 5¼, 7 and 8.....20&10%
Crescent.....60@60&10%
Nickel, Steel, Nos. 0, $25; 1, $20; 2, $15. 40&10@50%
Chicago Anti-Friction.....30&10%
star.....40&10@40&10&5%
Barry.....50%
Interstate.....50&10@60%
Pendulum, Payson's.....40@40&10%
Woody.....45%

Harness Snaps—See *Snaps.*

Hatchets—

American Axe and Tool Co.
Blood's.....
Hunt's.....
Hurd's.....
Mann's.....
Peck's.....
Underhill's.....
} 40 & 10 @ 60&5%
Buffalo Hammer Co.....
Fayette R. Plumb.....
C. Hammond & Son.....
Kelly's.....
Sargent's & Co.....
P., S. & W. Co.....
Ten Eyck Edge Tool Co.....
Collins.....10%
Schul Lohoff & Co.....50@50&5%

Hay and Straw Knives—

See *Knives.*

Hinges—

Blind Hinges—

Parker.....75&2%
Huffer.....50%
Clark's, Nos. 1, 3, 5, 40 and 50..80@80&5%
Clark's Mortise Gravity.....50%
Sargent's, Nos. 1, 3, 5, 11, 12, 13..75@75&10%
Reading's Gravity.....75&10@75&10&5%
Shepard's.
Noiseless.....75&10%
Niagara.....80%
Buffalo.....80%
Clark's Genuine Pattern.....80%
O. S., Lull & Porter.....75&10%
Acme, Lull & Porter.....75%
Queen City Reversible...70&10&5@75%
Clark's, Lull & Porter, Nos. 0, 1, 1½, 2, 2½, 3.....75&10&2½%
North's Automatic Blind Fixtures, No. 2, for Wood, $9.00; No. 3, for Brick, $11.50.....10%

Gate Hinges—

Western.....℔ doz $4.20, 60@60&10%
N. E.....℔ doz $7.80, 60@60&10%
N. E. Reversible ℔ doz..$5.60, 6 @60&10%
Clark's, Nos. 1 2, 3.....60&10&5%
N. Y. State.....℔ doz $4.90,60@60&10%
Automatic.....℔ doz $12.50, 50%
Shepard's.....60&10&5%

Spring Hinges—

Geer's Spring and Blank Butts...40%
Union Spring Hinge Co.'s list, March, 1886.....20%
Barker's Double Acting.....25%
Union Mfg. Co.....25%
Bommer's.....30%
Buckman's.....15@20%
Chicago.....30%
Bardsley's Patent Checking.....15%
Acme.....30%
U. S.....25&10%
Empire and Crown.....20%
Hero and Monarch.....55%
American, Gem and Star.....20%
Oxford.....20%
Royal.....66⅔%
Reliable.....60%
Champion.....60%
No. 10 Matchless.....60%
No. 25 Unbreakable.....60%
J. G. C. Covered, ℔ gro., $30.....50&5%
Samson.....60@60& 1&%
Wiles', No. 1, ℔ gro., $16; No. 2.....$13
Devore, No. 1.....℔ gro, $13.00
Rex.....℔ gro., $13.00
Freeport.....℔ gro., $12.00

Extra 5@10% often given.

Wrought Iron Hinges—

List February 14, 1891.
Strap and T.....50&10@50&10&5%
Corrugated Strap and T.....50&10&5%
Screw Hook and Strap... { 6 to 12 in., ℔ ℔.. 4¢ / 14 to 20 in., ℔ ℔..3½¢ / 22 to 36 in., ℔ ℔.. 3¢
Screw Hook and Eye.... { ½ in., ℔ ℔ 7½¢ / ⅝ in., ℔ ℔ 5½¢ / ¾ in., ℔ ℔ 4½¢
Rolled Blind Hinges, Nos. 32 and 34 50&10%
Rolled Blind Hinges, Nos. 232 and 234 55&10%
Rolled Plate.....70&10%
Rolled Raised.....70&10¢
Plate Hinges { 8, 10 & 12 in., ℔ ℔.....5¢ / "Providence" { over 12 in. ℔ ℔.....4¢

Hoes—

Eye—

D. & H. Scovil.....20%
Lane's Crescent, Planters' Pattern.45&5%
Lane's Razor Blade, Scovil Pattern...30%
Maynard, S. & O. Pat.....45&5%
Sandusky Tool Co., S. & O. Pat } 70@70& Am. Axe and Tool Co., S. & O. Pat... } 5%
Chattanooga Tool Co., S. & O. Pat..60& 5@60&10%
Grub.....60&10%

Handled—

Garden, Mortar, &c.....70@70&5&2%
Planter's, Cotton, &c.....70@70&5&2%
Warren Hoe.....60@60&5%
Magic.....℔ doz $4.00

Hog Rings and Ringers—

See *Rings and Ringers—*

Hoisting Apparatus—

See *Machines, Hoisting.*

Hollow-Ware—

See *Ware, Hollow.*

Holders—

Bag—

Sprengle's Pat.....℔ doz $18....60%

Bit—

Extension.
Barber's, ℔ doz $15.00.....40@40&10%
Ives, ℔ doz $20.00.....60&5@60&10%
Diagonal.....℔ doz $24.00, 40%
Angular.....℔ doz $24.00, 40&5%

File and Tool—

Balz Pat.....℔ doz $4.00, 25%
Nicholson File Holders.....20%
Dick's Tool Holder.....20%

Hooks—

Cast Iron—

Bird Cage, Sargent's List.....
Bird Cage, Reading.....
Clothes Line, Sargent's list
} 60&10&10%
Clothes Line, Reading list 60&10@60&10&10%
Ceiling, Sargent's list.....55&10&10%
Harness, Reading list..55&10@55&10&10%
Coat and Hat, Sargent's list. 55&10@.60&10%
Coat and Hat, Reading. 50&10@50&10&10%

Wrought Iron—

Cotton.....℔ doz $1.25
Cotton Pat. (N. Y. Mallet and Handle W'ks.....30%
Tassel and Picture, T. & S. Mfg.Co....50%
Wrought Staples, Hooks, &c. See Wrought Goods

Wire—

Wire Coat and Hat, Gem, list April, 1886.....60@60&10
Wire Coat and Hat, Miles, list April, 1886.....50@50&10%
Indestructible Coat and Hat...45@45&5%
Wire Coat and Hat, Standard..60@60&10%
Handy Hat and Coat.....50&10@60%
Steady Ceiling Hooks.....50&10@60%
Belt.....80&15@80&20%
Atlas, Coat and Hat.....65%
Williamson's Bird Cage Hooks, List April, 1892.....40%
Bright Wire Goods—See Wire.

Miscellaneous—

Grass,No.2, $2.00; No.3, $2.10; No. 4, $2.25
Nolin's Grass.....℔ doz $2.25
Bush.....55@60%
Whiffletree—Patent.....55%
Hooks and Eyes—Malleable Iron. 70&70&10%
Hooks and Eyes—Brass.....60&10&10%
Fish Hooks, American.....50%
Bench Hooks—See Bench Stops.

Horse Nails—See *Nails, Horse*

Horse Shoes—

See *Shoes, Horse.*

Hose, Rubber—

Competition.....75@75&10&5%
Standard.....60&10&10@70&10%
Extra.....60@60&10%
N. Y. B. & P. Co., Para.....25&5%
N. Y. B. & P. Co., Extra.....40@40&5%
N. Y. B. & P. Co., Dundee.....50&10@60%

Huskers—

Blair's Adjustable.....℔ gr $8.00
Blair's Adjustable Clipper.....℔ gr 7.00
Hubbard's Solid Steel.....℔ gr 4.50

Indurated Fiber Ware—

See *Ware, Indurated Fiber.*

Irons.

Sad—

From 4 to 10, at factory....℔ 100 ℔, $2.30@$2.40
Self-Heating.....℔ doz $8.00
Self-Heating Tailors'.....℔ doz $18.00
Enterprise Irons, list Jan. 17, 1893....30%
Enterprise Star Irons, list Jan. 17, '93..30%
Crown.....60&10@60&10&5%
Ideal Irons, new list...50&10@50&10&10%
Salamander Irons.....25%
B. B. Sad Irons, ℔ ℔.....3@3½¢
Combined Fluter and Sad Iron, ℔ doz. $15.00.....15%
Fox Reversible Self-Fluter, ℔ doz. $24.00
Chinese Laundry (N.E.Butt Co.).81½¢, 15%
New England.....5¢, 15%
Mahony's Troy Pol. Irons.....25%
Sensible, list Jan. 91.....50&10&5%
Sensible Tailor's Irons.....33⅓%
National Self-Heating.....30%

Soldering—

Soldering Coppers.....℔ ℔ 19@21¢
Covert's Adjustable, list Jan. 1, 1886, 35&2%

Pinking—

Pinking Irons, ℔ doz., 55@60¢.

Jack Screws—See *Screws.*

Jacks, Wagon—

Daisy.....33⅓%
Victor.....33⅓%
Lockport.....40%

Kettles—

Brass, Spun, Plain, list Jan. 1, '91..25&5%
Brass, Spun, Pld.W.M.list Jan. 1, '91..20%
Enameled and Tea—See *Ware, Hollow.*

Keys—

Lock, Ass'n list Dec. 30, 1886.50&10@ 60&5%
Eagle, Cabinet, &c.....33⅓&2%
Hotchkiss' Brass Blanks.....40%
Hotchkiss' Copper and Tinned.....40%
Hotchkiss' Pad. and Cab.....35%
Ratchet Bed Keys.....℔ doz. $4.00, 15%
Wollensak Tinned.....50&10%

Knife Sharpeners—

See *Sharpeners, Knife.*

Knives—

Butcher, Shoe, &c.

Wilson's Butcher Knives, List Dec 8, 1890.....25%
Ames' Butcher Knives.....25%
Foster Bros.' Butcher, &c.....40%
Jordan's Aa A1 Butchers', list.....net
Nichols' Butcher Knives.....40&10%
W. W. Wilson, Butcher, 6 in., $2.00; 7 in., $2.70; 8 in., $3.80, &c.
Ames' Shoe Knives.....20@25%
Ames' Bread Knives, ℔ doz $1.50, 15@20%
Moran's Shoe and Bread.....20@20&10%
Hay and Straw—See Hay Knives.
Table and Pocket—See Cutlery.

Corn—

Bradley's.....10%
Wadsworth's.....25@25&10%

Drawing—

Witherby.....
P., S. & W.....
Mix.....
New Haven.....
} ...75@75&10&5%
Merrill.....60&10@6&10&5%
Douglass.....75&75@5%
Watrous.....10&10@25¢
L. & I. J. White.....20&5%
Bradley's.....35%
Adjustable Handle.....25@33⅓%
Wilkinson's Folding.....25@35&5%

Hay and Straw—

Lightning, from jobbers....$8.00@$9.00
Wadsworth's.....40&7½@40&10%
Carter's Needle...℔ doz. $11.00@$11.50
Heath's.....℔ doz. $13.00@$13.50
Nolin's Hay.....℔ doz. $7.00@$8.00

Mincing—

Am. (2d quality), ℔ gr., 1 blade, $7
2 blades, $12; 3 blades, $18.....net
Lothrop's.....20&10%
Smith's, ℔ doz., Single, $2; Double $3 ½5@50%
Knapp & Cowles.....50&10@60%
Buffalo Adjustable....℔ doz. $3.00, 33⅓%

Knobs—

Door, Mineral.....60@65%
Door, Por. Jap'd.....70@75%
Door, Por. Nickel.....$2.00@$2.25
Door, Por. Plated Nicke..l...$2.00@$2.25
Drawer, Porcelain....60&10@60&10&10%
Hemacite Door Knobs.....40&10&50%
Yale & Towne Wood, list Dec., 1885...40%
Furniture Plain.....75¢ gro inch, 10%
Furniture, Wood Screws.....25&10%
Base, Rubber Tip.....70&10&5%
Picture, Judd's.....60&10&10@70%
Picture, Sargent's.....70&10%
Picture, Hemacite.....35&5%
Shutter, Porcelain.....65&15%
Carriage, Jap.....℔ gro 80¢, 60&10%
Bardsley's Wood Door, Shutter, &c...15%

Ladders.

Davies Extension and Single.....20&5%

Ladies—

Melting, Sargents'.....60@60&5%
Melting, Reading.....35&10%
Melting, Monroe's Pat...℔ doz $4.00, 40%
Melting, P., S. & W.....35&10@40%
Melting, Warner's.....30%

Lanterns—

Tubular—

Regular, with Guard.....℔ doz $3.50
O. K., with Guard.....℔ doz $3.75
Side Lift, with Guard.....℔ doz $4.00
Square Lift, with Guard.....℔ doz $4.25
Anti-Friction, with Guard....℔ doz $4.50
Brass Plated, Sq. Lift, Guard..℔ doz $5.50
Cop. Plated, Sq. Lift, Guard..℔ doz $5.50

Bull's Eye Police—

2¾-inch regular.....℔ doz $3.00
3-inch regular.....℔ doz $3.00
2¾-inch flash light.....℔ doz $4.00
3-inch flash light.....℔ doz $4.50

Lawn Mowers—

See *Mowers, Lawn.*

Leaders, Cattle—

Humason, Beckley & Co.'s.....70%
Sargent's.....70&10@70&10&10%
Hotchkiss.....30%
Peck, Stow & W. Co.....60&10%

Lemon Squeezers—

See *Squeezers, Lemon.*

Lifters, Transom—

Wollensak's:
Class 3 and 4, Bronzed Iron.....50%
Class 3 and 4, Bronze Metal.....25%
Class 3 and 4, Brass.....35%
Skylight Lifters.....35%
Crown, Eagle and Shield.....50%
Reiher's, list Feb. 20, 1891
Bronzed Iron Rods.....50&10&10&2%
Brass, Real Bronze or Nickel Plate..30%
Excelsior.....50&10&2%
Shaw's.....50&10%
Payson's:
Universal.....60%
Solid Grip.....60&10@60&10&10%
Imperial.....50&10%

Lines—

Cotton and Linen Fish, Draper's.....50%
Draper's and Tate's Chalk.....60%
Draper's Masons' Linen, 84 ft., No. 1, $1.25; No. 2, $1.75; No. 3, $2.25; No. 4, $2.75; No. 5, $3.25.....25%
Cotton Chalk.....55%
Samson Cotton, No. 4, $2; No. 4½, $2.50; 10%
Silver Lake, Braided No. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ℔ gro.....25%
Mason's Linen, No. 3½, $1.50; No. 4, $2.00; No 4½, $2.50.
Mason s Colored Cotton.....45%
Wire Clothes..Nos. 18 19 20
100 ft.....$3.50 $3.00 $2.50
Ventilator Cord, Samson Braided, White or Drab Cotton..℔ doz $7.50..20%
Ossawan Mills, Chalk, Twisted, 60%; Chalk, Soft Braided, 50% Chalk, Braided, 25%.

Links, Open—

Terry's—per gro.:

Nos.	1	2	3	4
	$6.00	8.00	12.00	16.00

Locks, &c.—

Cabinet—

Eagle, Gaylord Parker and Corbin... } List March, '84, rev. Jan. 1, '85.33⅓&2%
Deitz, Nos. 36 to 39.....40%
Deitz, Nos. 51 to 63.....40&10%
Deitz, Nos. 87 to 96.....30%
Stoddard Lock Co.....30@33⅓%
"Champion" Night Latches.....40%
Barnes Mfg. Co.....40@40&10%
Eagle and Corbin Trunk.....25&10%
"Champion" Cab. and Combin...33⅓%
Yale.....net prices
Romer's.....25%

Door, Locks, Latches, &c.—

R. & E. Mfg. Co., list Mar.20, 1889..... } 65&10@70% Much
Mallory, Wheeler & Co., list July, '88..... } lower net
Sargent & Co., List Aug. 1, '88 } prices
Branford Lock Works..... } often made

Brittan, Graham & Mathes, list Jan. 1890.....60&10&10%
Perkins' Burglar Proof.....60&25%
Plate.....33⅓&2%
Barnes Mfg. Co.....40&40&10%
Yale.....net prices
Delta Flat Key.....30%
L. & C. Round Key Latches.....30&10%
L. & C. Flat Key Latches.....33⅓&10%
Romer's Night Latches.....15%
Brooklyn Latches.....50&10%
Shepardson or U. S.....35%
Reed's N. Y. Hasp Lock.....25%
Warner's Burglar Proof. ₱ doz. $8.00, 50%

Padlocks—

List June'10, 1891.....50&2%
Norwich Lock Mfg. Co., old list....50&2%
Yale Lock Mfg. Co.'s.....net prices
Eagle.....40%
Eureka, Eagle Lock Co.....40&2%
Romer's Nos. 0 to 91.....30%
Romer's Scandinavian, &c., Nos. 100 to 506.....15%
A. E. Delta.....40%
Champion Padlocks.....40%
Hotchkiss.....30%
Star.....60%
Horseshoe.....₱ doz $9, 40&40&10%
Barnes Mfg. Co.....40&40&10%
Nock's.....30%
Brown's Pat.....25%
Scandinavian.....90&40%
E. T. Fraim's Keystone Scandinavian, Nos. 119, 120, 130 and 140.....90&10%
Other Nos.....65%
Ames Sword Co. up to No. 150.....40%
Ames Sword Co. above No. 150.....50%
Blaymaker, Barry & Co.
No. 1010 line.....90&5%
No. 41 line.....50&5%
No. 61 line.....60&5%
No. 21 line.....75&10%

Sash, &c.—

Clark's No. 1, $10; No. 2, $8 ₱ gr.....33⅓%
Ferguson's.....33⅓%
Victor.....60&10&2%
Walker's.....10%
Attwell Mfg. Co.....25&33⅓%
Reading.....60%&10@60%&10&10%
Hammond's Window Springs.....40%
Common Sense, Jap'd, Cop'd and Br'zed.....₱ gr $4.00
Common Sense, Nickel Plated. ₱ gr $10.00
Universal.....30%
Kempshall's Gravity.....60%
Kempshall's Model.....60@60&10%
Corbin's Daisy, list Feb. 15, 1886.....70%
Payson's Perfect.....60&10&10%
Hugunin's Sash Balances.....25&5&2%
Hugunin's New Sash Locks.....25&5&2%
Stoddard's "Practical".....10%
Ives Patent.....60&10&5@60&10&10%
Fish (Liesche's pat.), No. 100, ₱ gr., $8; No. 105, ₱ gr., $10.....50%
Davis, Bronze, Barnes Mfg. Co.....70%
Champion Safety list January, 1893.70&5%
Security.....70%
Giant, list Jan., 1892.....70&5%
Wolcott's.....60&10&5%
Monarch.....50%

Lumber Tools—

See *Tools, Lumber.*

Lustro—

Four-ounce bottles.....₱ doz, $1.75; ₱ gross.....$17.00

Machines.

Boring—

	Without Augers.	Upright.	Angular.	
Douglas		$5.50	$6.75	50%
Snell's, Rice's Pat..	5.50	6.75	40&10&10%	
Jennings'	5.50	6.75	45@45&10%	
Other Machines..	2.35	2.75		
Phillips' Patent with Augur	7.00	7.50		
Miller's Falls	7.50			25%

Fluting—

Knox, 4¼-inch Rolls.....$3.25 each } 35%
Knox, 6-inch Rolls.....$3.60 each }
Eagle, 3¼-inch Rolls, $2.15.....35%
Eagle, 5¼-inch Rolls, $2.85.....35%
Crown, 4¼ in., $3.50; 6 in., $4.00; 8 in., $6.50 each.....35%
Crown Jewel, 6 in.....$3.50 each, 35%
American, 5 in., $3.00; 6 in., $3.40; 7 in., $4.50 each.....35%
Domestic Fluter.....each, $1.50
Geneva Hand Fluter, White Metal, ₱ doz $12, 25%
Crown Hand Fluter, Nos. 1, $15.00; 2, $12.50; 3, $10.00.....30%
Shepard Hand Fluter, No. 85, per doz $15.50.....40%
Shepard Hand Fluter, No. 110, ₱ doz $11.00.....40%
Shepard Hand Fluter No. 95, ₱ doz $8.00.....40%
Clark's Hand Fluter, ₱ doz $15.00....35%
Combined Fluter and Sad Iron. ₱ doz $15.00.....30%
Buffalo, ₱ doz $10.00.....10%

Hoisting—

Moore's Hand Hoist, with Lock Brake.20%
Moore's Differential Pulley Block....40%
Energy's Mfg. Co.'s.....25%
Sure Grip Steel Tackle Blocks.....25%

Washing—

Anthony Wayne, ₱ doz, No. 1, $51; No. 2, $45; No. 3, $42.
Western Star ₱ doz, No. 2, $45; No. 2 $48.
Weisell.....₱ doz $54.00
Fair and Square.....₱ doz $42.00

Mallets—

Hickory.....20&10@20&10&10%
Lignumvitæ.....20&10@20&10&10%
B. & L. Block Co., Hickory & L. V. 30@30&10%

Mattocks—Regular list. 60&10@60&10&5%

Measures—

tandard Fiberware, No. 1, peck ₱ dozen, $4; ½-peck, $3.50.

Meat Cutters—

See *Cutters Meat.*

Menders, Harness—

Per doz.....$2.00

Milk Cans—See *Cans, Milk.*

Mills—

Coffee—

Box and Side, List Jan. 1, 1888.60@60&10%
Net prices are often made which are lower than above discount.
American, Enterprise Mfg. Co., list Jan. 17, 1893.....20%
The Swift, Lane Bros.....30%

Mincing Knives—

See *Knives, Mincing.*

Molasses Gates—

See *Gates, Molasses.*

Money Drawers—

See *Drawers, Money.*

Mowers, Lawn—

Philadelphia.....60&10%
Pennsylvania and Continental.....60%
New Model and Excelsior.....60@60&10%
Other Machines, following net prices:
10-in. $3; 12-in., $3.25; 14-in., $3 50 each

Muzzles—

Safety.....₱ doz, $3.00, 25%

Nails.—

Cut and Wire. See Trade Report.
Wire Nails, Papered.
Association list, May 1, '92.80&10&10&5%
Tack Mfrs.' list.....70&5@70&10%
Hungarian, Finishing, &c. See *Tacks.*

Horse—

	Nos. 6	7	8	9	10	
American	85%	85%	85%	85%	85%	.net
Ausable	25¢	26¢	25¢	24¢	23¢	40&10&2%
Clinton, Fin.	19¢	17¢	16¢	15¢	14¢	.30&10%
Essex	28¢	26¢	25¢	24¢	23¢	40&10&5@50&5%
Lyra	19¢	17¢	16¢	15¢	14¢	.40&10%
Snowden	19¢	17¢	16¢	15¢	14¢	.40&10%
Vulcan	23¢	21¢	20¢	19¢	18¢.	..25%
Northwest'n.	25¢	23¢	22¢	21¢	20¢	25@25&5%
A. C.	25¢	23¢	22¢	21¢	21¢	25&10@33⅓&5%
C. B. K.	25¢	23¢	22¢	21¢	21¢	33⅓@33⅓&10%
Maud S.	25¢	23¢	22¢	21¢	21¢	40&10&5%
Champlain	28¢	26¢	25¢	24¢	23¢	40&5&5&2%
Saranac	23¢	21¢	20¢	19¢	18¢.	..40&5%
Champion	25¢	23¢	22¢	21¢	20¢	10&10&10%
Capewell.	19¢	18¢	17¢	16¢	16¢.	..10&5%
Anchor	23¢	21¢	20¢	19¢	18¢	.35%
Western	23¢	21¢	20¢	19¢	18¢	.50%
Empire Bronzed						.13@14 ₱ ℔

Picture—

Brass Head, Sargent's list.....60@60&10%
Brass Head, Combination list.....50&10%
Porcelain Head, Sargent's list.50&10&10%
Porcelain Head, Combination list.40&10%
Niles' Patent.....40%

Nail Pullers—See *Pullers, Nail.*

Nail Sets—See *Sets, Nail.*

Nut Crackers—

See *Crackers, Nut.*

Nuts—List Dec. 18, 1889.

	Square.	Hex.
Hot Pressed	5.80¢	6.50¢ off list
Cold Punched	5.00¢	5.10¢ off list

In packages of 100 ℔, add 1-10¢ ₱ ℔, net; in packages less than 100 ℔, add ½¢ ₱ ℔, net.

Oakum—

Best or Government. .....₱ ℔ 6¾@7¼¢
U. S. Navy.....₱ ℔ 5¾@6¢
Navy.....₱ ℔ 5¢@5¼¢

Oil Tanks—See *Tanks, Oil.*

Oilers—

Zinc and Tin.....65&10@70&5%
Brass and Copper.....50&10@50&10&5%
Malleable, Hammers' Improved, No. 1, $3.60; No. 2, $4.00; No. 3, $4.40 ₱ doz. 10@10&5%
Malleable, Hammers' Old Pattern, same list.....45%
Prior's Pat. or "Paragon" Zinc. 60&10&10%
Prior's Pat. or "Paragon" Brass.....50%
Olmstead's Tin and Zinc.....60%
Olmstead's Brass and Copper.....50%
Broughton's Zinc.....60%
Broughton's Brass.....50%
Gem, P., D. & Co.....₱ gro. $2
Steel, Draper & Williams.....50%

Openers Can—

Messenger's Comet.....₱ doz $3.00, 25%
American.....₱ gross $2.75@$3.00
Duplex.....₱ doz 25¢, 15&20%
Lyman's.....₱ doz $3.75, 20%
No. 4, French.....₱ doz $2.25, 55@60%
No. 5, Iron Handle.....₱ gr $6.00, 45@50%
Eureka.....₱ doz $2.50, 10%
Sardine Scissors.....₱ doz $2.75@3.00
Star.....₱ doz $2.75
Sprague, No. 1, $2.00; 2, $2.25; 3, $2.50; 60%@70%
Excelsior, No. 1 $2.50; No. 2, $1.50....40%
World's Best ₱ gross, No. 1, $12.00; No. 2, $24.00; No. 3, $36.00.....50&10%
Universal, ₱ doz $3.00.....55&5%
Domestic, ₱ doz $2.00.....45%
Champion, ₱ doz $2.00.....50%

Packing, Steam—

Rubber—

Standard.....70@70&10%
Extra.....60@60&5%
N. Y. B. & P. Co., Standard.....50%
N. Y. B. & P. Co., Empire.....60%
N. Y. B. & P. Co., Salamander.....25%
Jenkins' Standard, ₱ ℔ 80¢....25@25&5%

Miscellaneous—

American Packing.....10¢@11¢ ₱ ℔
Russia Packing.....14¢ ₱ ℔
Italian Packing.....13¢@14¢ ₱ ℔
Cotton Packing.....15¢@17¢ ₱ ℔
Jute.....7¢@8¢ ₱ ℔

Pails—

Creamery—

S. S. & Co.: 18-qt., $7.00; 20-qt., $7.25 per doz.....5%

Galvanized—

	Quarts 10	12	14
Hill's Light Weight, ₱ doz.	$2.75	3.00	3.25
Hill's Heavy Weight, ₱ dz.	3.00	3.25	3.75
Heiwig's	2.50	2.75	3.00
Sidney Shepard & Co.	2.35	2.85	3.05
Iron Clad	2.50	2.75	3.00
Fire Buckets	2.75	3.25	3.50

Buckets—See Well Buckets.

Indurated Fiber Ware—25%

Star Pails, 12 qt.....₱ doz $4.20
Milk, 14 qt.....₱ doz $5.40
Stable, 14 qu.....₱ doz $6.00
Fire Pails, deep.....₱ doz $4.80
Fire Pails, round bottom.....₱ doz $5.40

Standard Fiber Ware—

	Plain.	Decr'd
Water Pails, 12 qt., ₱ doz.	$3.60	$4.00
Dairy Pails, 14 qt., ₱ doz.	4.00	4.50
Fire Pails, No. 1, 12 qt., ₱ doz	4.00	
Fire Pails, No. 2, 14 qt., ₱ doz	4.50	
Sugar Pails	5.50	6.00
Horse Pails	4.50	
Buggy Pails	3.50	
Slop Jars (bal. trap)	7.50	8.50
Chamber Pails, 14 qt.	6.00	7.00

Pans—

Dripping—

Small sizes.....₱ ℔ 5½¢
Large sizes.....₱ ℔ 5¢
Silver & Co. (Covered).....40%

Fry—

Standard List:

No.	0	1	2	3	4
₱ doz.	$3.00	$3.75	$4.25	4.75	$5.25
No.	5	6	7	8	
₱ doz.	$6.00	$7.00	$8.00	$9.00	

Polished, regular goods.....75@75&10%
Acme Fry Pans.....66⅔%

Dust—

Steel Edge, No. 1.....₱ doz $1.75

Roasting and Baking—

Columbia, S. S. & Co.: Nos. 10, $2; 20, $2.25; 30, $2.50 each.....50%

Paper and Cloth—Sand and Emery—

List April 19, 1886.....50&10@50&10&5%
Sibley's Emery and Crocus Cloth.....30%

Parers—

Apple—

Advance.....₱ doz $4.75
Baldwin.....₱ doz 5.25
Bonanza.....each 5.00
Daisy.....₱ doz 4.00
Dandy.....each 7.50
Eclipse.....₱ doz 4.25
Eureka, 1888.....each 16.00
Family Bay State.....₱ doz 12.00
Favorite.....₱ doz 5.00
Gold Medal.....₱ doz 4.00
Ideal.....₱ doz 4.00
Improved Bay State....₱ doz 27.00@30.00
Little Star.....₱ doz 4.50
Monarch.....₱ doz 13.50
New Lightning.....₱ doz 5.50
Oriole.....₱ doz 4.00
Penn.....₱ doz 4.00
Perfection.....₱ doz 4.00
Pomona.....₱ doz 4.00
Rocking Table.....₱ doz 6.00
Turn Table.....₱ doz 4.50
Victor.....₱ doz 13.50
Waverly.....₱ doz 4.00
White Mountain.....₱ doz 4.00
72.....₱ doz 4.25
73.....₱ doz 7.00

Potato—

White Mountain.....₱ doz $4.50
Antrim Combination.....₱ doz $5.50
Hoosier.....₱ doz $13.50
Saratoga.....₱ doz $5.50

Pencils—

Faber's Carpenters'.....high list 50%
Faber's Round Gilt.....₱ gro $5.25
Dixon's Lead.....₱ gro $4.50
Dixon's Lumber.....₱ gro $0.75
Dixon's Carpenters'.....10%

Picks—

Railroad or Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00.....60&10@60&10&10%

Picture Nails—

See *Nails, Picture.*

Pinking Irons—

See *Irons, Pinking.*

Pins—

Bow—

Humason, Beckley & Co.'s.....60&10%
Sargent & Co.'s, $17 and $18.....60&10%
Peck, Stow & W. Co....50&10@50&10&5%

Curtain—

Silvered Glass.....net
White Enamel.....net

Escutcheon—

Iron, list Nov. 11, 1885..50&10@50&10&5%
Brass.....60@60&5%

Pipe, Wrought Iron—

List October 12, 1892.

1¼ and under, Plain.....60@60&5%
1¼ and under, Galv.....52½@52½&5%
1½ and over, Plain.....70@70&5%
1½ and over, Galv.....60@60&5%
Boiler Tubes, list Oct. 24, 1892.....65&5%
Casing, list Nov. 16, 1892.....52½&5%
Inserted Joints Casing, list Nov. 16, 1892.....47½&5%
Steel Boiler Tubes.....27½&5%
Cold Drawn Seamless Steel Tubing..50%

Planes and Plane Irons—

Wood Planes—

Molding.....40@40&10%
Bench, First quality.....45@45&10%
Bench, Second quality.....50@50&10%
Bailey's (Stanley R. & L. Co.)....50&10%

Iron Planes—

Bailey's (Stanley R. & L. Co.).....50&10%
Miscellaneous Planes (Stanley R. & L. Co.).....25&10%
Steers' Iron Planes.....50@50&5%
Meriden Mal. Iron Co.'s.....50@50&5%
Davis' Iron Planes.....50@50&5%
Birmingham Plane Co.....60@60&5%
Gage Tool Co.'s Self-Setting...20&10&10%
Chaplin's Iron Planes.....50@50&5%
Sargent's.....60@60&10%
Standard Tool Co.....60@50&5%

Plane Irons—

Butcher's.....$5.00@$5.25 to $
Buck Bros.....30%
Auburn Thistle.....
Ohio.....30&10%
Sandusky.....
L. & I. J. White.....25%
Stanley R. & L. Co.....50&10%

Plates—

Felloe.....₱ ℔ 6¢@6½¢

Pliers and Nippers—

Button's Patent.....60%
Hall's No. 2, 5 in., $13.50; No. 4, 7 in., $21.00 ₱ doz.....40%
Humason & Beckley Mfg. Co..50@50&10%
Lindsay's Giant.....33⅓%
Gas Pliers.....60%
Gas Pliers, Custar's Nickel Plated..60&5%
Eureka Pliers and Nippers.....40%
Russell's Parallel.....25%
P., S. & W. Cast Steel.....50%
P., S. & W. Tinners' Cutting Nippers, add 6%.....10%
Carew's Pat. Wire Cutters.....30%
Morrill's Parallel, ₱ doz, $12.00....30&5%
Cronk's 8 in., $15.00; 10 in., $21.00.....50@50&5%
Cronk's Button Pattern.....50&10@60%
Cronk's Carrier Pliers.....60@60&5%

Plumbs and Levels—

Regular List.....75&10@75&10&5%
Stanley's Duplex.....20&10%
Stanley's Handy.....20&10%
Disston's.....50%
Pocket Levels.....70&10@70&10&10%
Davis Iron Levels.....40@10%
Davis' Inclinometers.....10&10%

Poachers, Egg—

Buffalo Steam Egg Poachers, ₱ doz, No. 1, $6.00; No. 2, $9.00.....33⅓%
Silver & Co., 6-Ring, ₱ doz, $4.00; 3-Ring.....$2.00

Pokes, Animal—

Bishop s I. X. L.....₱ doz $6.00
Bishop's O. K.....₱ doz $5.25
Bishop's Pioneer.....₱ doz $3.75
Bishop's American.....₱ doz $2.75
Eagle, Double Stale.....₱ doz $5.75
Eagle, Single Stale.....₱ doz $3.75
Buckeye, Single Stale.....₱ doz $2.75
Bolding.....₱ doz $6.00
Metallic Horse Poke.....₱ doz., $6.00

Police Goods—

R. I. Tool Co., Handcuffs, $15.00 ₱ doz 10%
R. I. Tool Co., Leg Irons, $25.00 ₱ doz 10%
Tower's.....25%
Daley's Improved Handcuffs; 2 Hands, Polished, ₱ doz, $48.00; Nickeled, $57.00; 3 hands, Polished, ₱ doz, $72.00; Nickeled, $84.00.....25%
J. P. Lovell's Police Goods.....25%

Polish—

Metal—

Prestoline.....30%
Prestoline Paste.....33⅓%
Gaston's Silver Compound.....33⅓%

Stove—

Joseph Dixon's.....₱ gro, $6.00, 10%
Gem.....₱ gro, $4.50, 10%
Gold Medal.....₱ gro, $6.00, 25%
Lustro.....₱ gro, $4.75
Ruby.....₱ gro, $3.75
Rising Sun, 5 gro lots.....₱ gro $5.50
Dixon's Plumbago.....₱ ℔ 8¢
Boynton's Noon Day.....₱ gro $13.00
Parlor Pride Stove Enamel, ₱ gro
Yates' Liquid, 2 3 5 10 gal
₱ gal...$0.80 .70 .60 .50
Yates Standard Paste Polish, 10 ℔ cans, ₱ ℔ 12½¢
Jet Black.....₱ gro $3.50
Japanese.....₱ gro $3.50
Fireside.....₱ gro $2.50
Diamond O. K. Enamel.....₱ gro $19.00
Bonnell's Liquid Stove Polish, ₱ gro $9.00
Bonnell's Paste Stove Polish, ₱ gro $6.00
Black Eagle Benzine Paste, 5 and 10 ℔ cans.....12½¢
Black Jack Water Paste, 5 and 10 ℔ cans.....12½¢
Nickel Plate Paste.....₱ gro $6.00
Crown Paste.....₱ gro $7.20
Crown Paste in 5 and 10 ℔ pails, ₱ ℔ 12¢
Black Flag.....₱ gro $7.20
Black Flag, 5 and 10 ℔ pails.....₱ ℔ 12¢
Black Flag, liquid, in bottles, ₱ gro $8.00
Diamond Rock Nickel Cleaner. ₱ gro $10.80
Raven Paste:
5-lb. pails, (per case of 6 or 12), ₱ ℔ 12¢
Less than case.....₱ ℔ 15¢
Liquid, 6 oz. bottles.....₱ gross, $3.00
Liquid, 8 oz. bottles.....₱ gross, $9.00
Water Polish.....₱ gross, $5.85

Poppers, Corn—

Round or Square, 1 qt..₱ gr $10.00@10.50
Round or Square, 1½ qt..₱ gr $15@$15.50
Round or Square, 2 qt..₱ gr $18.50@19.00

Post Hole and Tree Augers and Diggers—

See *Diggers, Post Hole, &c.*

Potato Parers—

See *Parers, Potato.*

Pots—

Glue—

Tinned.....40&10@40&10&5%
Enameled.....40&10@40&10&5%
Family, Howe's "Eureka".....40%
Family, L. F. C.'s "Handy".....50%

Powder—

In Canisters—

Fine Sporting, 1 ℔ each.....$0.90
Duck, 1 ℔ each.....60
Rifle, 1 ℔ each.....50
Rifle, ½ ℔ each.....25
Rifle, ¼ ℔ each.....13

In Kegs—

Rifle, 25-℔ kegs.....$4.00
Rifle, 12½-℔ kegs.....2.25
Rifle, 6¼-℔ kegs.....1.25
Duck, 25-℔ kegs.....5.00
Duck, 12½-℔ kegs.....2.75
Duck 6¼ ℔ kegs.....1.50

Presses—

Fruit and Jelly—

Enterprise Mfg. Co. 25%
Henis ..... ₱ doz $3.50
Shepard's Queen City 40%
Silver & Co. ..... ₱ doz $2.75

Pruning Hooks and Shears—See *Shears.*

Pullers Nail—

Scranton ..... ₱ doz., $18.00, 33⅓%
Curtis Hammer ..... ₱ doz., $9.00
Giant, No. 1 ..... ₱ doz., $18.00, 10%
Giant, No. 2 ..... ₱ doz., $15.00, 10%
Pelican ..... ₱ doz., $9.00, 25%
Eclipse ..... Each, $2.00, net
Economy ..... ₱ doz., $6.00

Pulleys—

Hot House, Awning, &c. ..... 66⅔@70%
Japanned Screw ..... 60&10&10%
Brass Screw 70%
Japanned Side ..... 60&10&10%
Japanned Clothes Line ..... 60&10%
Moore's Sash, Anti-Friction 50%
Hay Fork, Solid Eye, $4.00; Swivel, $4.50 ..... 50&10@50&10&5%
Hay Fork, "Anti-Friction," 5 in. solid, $5.70 ..... 50%
Hay Fork, "F" Common and Patent Bushed 20%
Hay Fork, Tarbox Pat. Iron 20%
Hay Fork, Reed's Self-Lubricating 60%
Shade Rack 45%
Tackle Blocks—See Blocks.
Moore's Anti-Friction 5 in. Wheel, ₱ doz., $12.00 ..... 40%
Shepard's Niagara, No. 25 ..... 80%
Sash (Auger Mortise).
Common Sense 60%
Empire 60%
Ideal, Nos. 2, 4, 10 & 15 / Acme / Star } 60% less 1¢ ₱ doz net.
On bbl. lots extra 5%.
Ideal, Nos. 25 and 55. .. ₱ doz. 22¢ net.

Pumps—

Cistern, Best Makers ..... 60@60&10%
Pitcher Spout, Best Makers ..... 67½@70%
Pitcher Spout, Cheaper G'ds ..... 75@75&10%

Punches—

Saddler's or Drive, good .. ₱ doz., 60@65%
Bemis & Call Co.'s Cast Steel Drive .. 50&5%
Bemis & Call Co.'s Springfield Socket .. 50&5%
Spring, good quality .. ₱ doz., $2.50@$2.60
Spring, Leach's Pat 15%
Bemis & Call Co.'s Spring and Cheek .. 40%
Solid Tinners', P., S. & W. Co., ₱ doz., $1.44 ..... 55%
Tinners' Hollow Punches, P., S. & W. Co. ..... 20&2%
Rice Hand Punches 15%
Avery's Revolving 40%
Avery's Sawset and Punch—See Sawsets

Rail—

Sliding Door, Wr't Brass .. ₱ ft., 35¢, 40¢
Sliding Door, Bronzed Wr't Iron .. ₱ ft., 7¢
Sliding Door, Iron, Painted .. ₱ ft., 4¢, 40%
Barn Door, Light .. In. ¼ ⅜
Per 100 feet $2.00 2.50 3.10, 10%
S. D. for N. E. Hangers—
Small. Med. Large.
Per 100 feet ..... $3.15 2.70 3.25 Net
Terry's Steel Rail ..... ₱ ft., 4½¢
Victor Track Rail, 7¢ ₱ foot ..... 50&2%
Carrier, double braced, Steel Rail, ₱ foot ..... 3½@4¢
Moore's Wrought Iron 25%
Moody Steel Rail, ₱ ft., 5¢ 45%

Rakes—

Cast Steel, Association g'ds .. 70@70&5&2%
Cast Steel, outside g'ds ..... 70@70&5&2%
Malleable ..... 70@70&5%
Gibbs' Lawn Rake ..... ₱ doz., $4.90
Gibbs' Canton Lawn Rake .. ₱ doz., $3.75
Gibbs' Acme Lawn Rake .. ₱ doz., $4.75
Gibbs' Favorite Lawn Rake .. ₱ doz., $3.90
Gibbs' Crown Lawn Rake, No. 1 ..... ₱ doz., $4.00; No. 2, $5.40
Onelda Lawn Rake ..... ₱ doz., $6.00
Fort Madison Prize Bow Brace and Peerless 65%
Fort Madison Steel Tooth Lawn Rake, $6.00 ..... 25%

Razors—

J. R. Torrey Razor Co 20%
Wostenholm and Butcher, $10 to £ 10%
Jordan's AAA1, new list ..... Net
Jordan's Old Faithful, new list ..... Net
Galvanic ..... ₱ doz., $15.00
Electric Cutlery Co. ..... Net
Campbell Cutlery Co. 50%

Razor Strops—See *Strops, Razor.*

Rings and Ringers—

Bull Rings—

Union Nut Co. 55%
Sargent's ..... 75&10%
Hotchkiss' low list 30%
Humason, Beckley & Co.'s ..... 70&10%
Peck, Stow & W. Co.'s .. 50&10@50&10&10%
Ellrich Hdw. Co., White Metal, low list. 50@50&10%

Hog—

Top of the Hill Ringers ..... ₱ doz $2.00
Top of the Hill Rings ..... ₱ doz $1.25
Hill's Improved Ringers ..... ₱ doz $1.25
Hill's Old Style Ringers ..... ₱ doz $1.12½
Hill's Tongs ..... ₱ doz $3.00
Hill's Rings ..... ₱ doz bxs $1.00
Perfect Rings ..... ₱ doz bxs $1.50
Perfect Ringers ..... ₱ doz $2.15@$2.25
Blair's Hog Ringers ..... ₱ doz $2.00
Blair's Hog Rings ..... ₱ doz 90¢@$1.00
Champion Ringers ..... ₱ doz $2.00
Champion Rings, Double ..... ₱ doz $2.25
Brown's Ringers ..... ₱ doz $2.00
Brown's Rings ..... ₱ doz $1.15@$1.25
Electric Hog Rings ..... ₱ doz boxes $1.50
Electric Hog Ringers ..... ₱ doz $2.00
Major Rings ..... ₱ doz $1.25
Major Ringers ..... ₱ doz $2.00

Rivets and Burrs—

Iron, list Nov. 17, '87 ..... 60&10@——%
Copper ..... 60@60&10%
Coppered Iron, Bettina Brand 40%

Rivet Sets—See *Sets.*

Roasting and Baking Pans—See *Pans, Roasting and Baking.*

Rods—

Stair, Brass ..... 25@30%
Stair, Black Walnut ..... ₱ doz 40¢

Rollers—

Barn Door, Sargent's list. ..... 60&10&10%
Acme Moore's Anti-Frictich. 55%
Union Barn Door Roller 70%
Thompson Mfg. Co.'s Lawn Rollers .. 30%

Rope—The following prices are f.o.b., New York or factory, and are shaded ½@¾¢ on large lots; terms, 1½ % for cash.

Manila, 7-16 in. diam. and larger ₱ ℔ 9¾¢
Manila ..... ⅜ in. ₱ ℔ 10¾¢
Manila ..... ¼ and 5-16 in. ₱ ℔ 10¾¢
Manila, Tarred Rope ..... ₱ ℔ 9¾¢
Manila, Hay Rope ..... ₱ ℔ 9¾¢
Sisal ..... 7-16 inch and larger ₱ ℔ 7¾¢
Sisal ..... ⅜ in. ₱ ℔ 8 ¢
Sisal ..... ¼ and 5-16 in. ₱ ℔ 8¼¢
Sisal, Hay Rope ..... ₱ ℔ 7½¢
Sisal, Tarred Rope ..... ₱ ℔ 7 ¢
Sisal, Medium Lath Yarn ..... ₱ ℔ 7 ¢
New Zealand .. 7-16 in. & larger ₱ ℔ 6¾¢
New Zealand ..... ⅜ inch, ₱ ℔ 7¼¢
New Zealand .. ¼ and 5-16 inch, ₱ ℔ 7¼¢
New Zealand, Hay Rope ..... ₱ ℔ 6¾¢
New Zealand, Tarred Rope ..... ₱ ℔ 6¼¢
Cotton Rope ..... ₱ ℔ 13¼@16¢
Jute Rope ..... ₱ ℔ 6½@7¢

Wire—

List February, 1892. All kinds 45%

Rules—

Boxwood ..... 80&10&10%
Ivory ..... 50&10%
Starrett's Steel Rules and Straight Edges ..... 25&10%

Sad Irons—See *Irons, Sad.*

Sand and Emery Paper and Cloth—See *Paper and Cloth.*

Sash Cord—See *Cord, Sash.*

Sash Locks—*See Locks, Sash.*

Sash Weights—See *Weights, Sash.*

Sausage Stuffers or Fillers—See *Stuffers or Fillers, Sausage.*

Saws—The following prices are generally cut by jobbers.

Disston's Circular ..... 45@45&5%
Disston's Cross Cut ..... 40@40&5%
Disston's Hand 25%
Woodrough & McParlin.
Hand, Panel and Rip ..... 30@30&5%
Narrow Champion Cross Cuts with Handles, ₱ foot ..... 18@20¢
Champion Thin Back Cross Cuts, ₱ foot ..... 26@28¢
Champion Extra Thin Back Cross Cuts, ₱ foot ..... 29@31¢
One Man Champion Cross Cuts, ₱ foot ..... 37@40¢
Wheeler, Madden & Clemson Mfg. Co.
Hand, Panel and Rip ..... 35@35&5%
Narrow Champion Cross Cuts with Handles, ₱ foot ..... 18@20¢
Champion Thin Back Cross Cuts, ₱ foot ..... 26@28¢
Champion Extra Thin Back Cross Cuts, ₱ foot ..... 29@31¢
One Man Champion Cross Cuts, ₱ ft. .. 37@39¢
Atkins' Circular 50%
Atkins' Cross Cuts, new list 40%
Atkins' Mulay, Mill and Drag 40%
Atkins' One-Man Saw 40%
Peace Circular and Mill ..... 45@45&5%
Peace Hand Panel and Rip ..... 25@25&5%
Peace Cross Cuts ..... 45@45&5%
Richardson's Circular and Mill .. 45@45&5%
Richardson's X Cuts ..... 45@45&5%
Richardson's Hand, &c ..... 25@25&5%
C. E. Jennings & Co.'s brand 25%

Hack Saws—

Griffin's, complete ..... 40&10@50
Griffin's Hack Saw Blades ..... 40&10@50
Star Hack Saws and Blades 25%
Eureka and Crescent 25%

Scroll—

Lester, complete, $10.00 ..... 25%
Rogers, complete, $4.00 ..... 25%
Barnes' Builders' and Cab Makers' .. 25%
Barnes' Scroll Saw Blades 35%

Saw Frames—See *Frames, Saw.*

Saw Sets—See *Sets, Saw.*

Saw Tools—See *Tools, Saw.*

Scales—

Hatch, Counter, No. 171, good quality ..... ₱ doz $18.00@$19.00
Hatch, Tea, No. 161 .. ₱ doz $6.50@7.00
Union Platform, Plain ..... $2.10@2.20
Union Platform, Striped ..... $2.40@2.50
Chatillon's Grocers' Trip Scales 50%
Chatillon's Eureka 25%
Chatillon's Favorite 40%
Family, Turnbulls ..... 30@30&10
Riehle Bros.' Platform 40%

Scale Beams—See *Beams, Scale.*

Scissors, Fluting 45%

Scrapers—

Adjustable Box Scraper (S. R. & L. Co.) $6.00 ..... 30&10%
Box, 1 Handle ..... ₱ doz $2.25@$2.50
Box, 2 Handle ..... ₱ doz $3.00@$3.25
Defiance Box and Ship ..... 20&10%
Foot ..... 50&10&10%
Ship, Common ..... ₱ doz $3.50 net
Ship, R. I. Tool Co. 10%

Screen Window and Door Frames—See *Frames*

Screw Drivers—See *Drivers, Screw.*

Screws—

Bench and Hand—

Bench, Iron ..... 55&10@55&10&10%
Bench, Wood, Beech ..... ₱ doz $2.25
Bench, Wood, Hickory ..... 20&10%
Hand, Wood ..... 25&10@25&10&5%
Hand, Grand Rapids, list 35%

Coach, Lag and Hand-Rail—

Lag, Blunt Point, list Jan. 1, 1890 ..... 80@80&10%
Coach and Lag, Gimlet Point, list Jan. 1, 1890 ..... 80@80&5%
Hand Rail, Sargent's ..... 70&10%
Hand Rail, H. & B. Mfg. Co. .. 70&10@75%
Hand Rail, Am. Screw Co. 75%

Jack Screws—

Jack Screws, Millers Falls list .. 50@50&10%
Jack Screws, P., S. & W. 35%
Jack Screws, Sargent 70%
Jack Screws, Stearns' ..... 40@40&10%

Cork—

Humason & Beckley Mfg. Co. .. 40&10@50%
Williamson's ..... 33⅓@33⅓&5%
Detroit Cork Screw Co. 33⅓%

Machine—

Flat Head Iron 65%
Round Head Iron 60%

Wood—

List January 1, 1891.
Flat Head Iron 70%
Round Head Iron 65%
Flat Head Brass 70%
Round Head Brass 65%
Flat Head Bronze 70%
Round Head, Bronze 65%
} Extra 10 or 10& 10% often given.
Rogers' Drive Screws 82½%

Scroll Saws—See *Saws, Scroll.*

Scythes—

Grain ..... 40&5@40&10%
Grass ..... 40@10&50%

Scythe Snaths—See *Snaths, Scythe.*

Sets—

Awl and Tool—

Aiken's Sets, Awls and Tools, No. 20, ₱ doz $10.00 ..... 60@60&5%
Fray's Adj. Tool Hdls., Nos. 1, $12; 2, $18; 3, $12; 4, $9 ..... 45%
Millers Falls Adj. Tool Hdls., Nos. 1, $12; 2, $18 ..... 25%
Henry's Combination Haft .. ₱ doz $6.50
Stanley's Excelsior: No. 1, $7.50; No. 2, $4.00; No. 3, $5.50 ..... 30&10%
Common Brad Sets, No. 42, $10.50; No. 43, $12.50 .. 70&10&5%

Nail—

Square ..... ₱ gr. $4.00@$4.25
Round ..... ₱ gr. $3.25
Buck Bros. 27½%
Cannon's Diamond Point .. ₱ gr. $12, 20%

Rivet—

Regular list 70%

Saw—

Stillman's Genuine .. ₱ doz $5.00@7.75, 40&5%
Stillman's Pattern, Hand, ₱ doz $3.25; Cross Cut, $5.25 ..... 55%
Common Lever ..... ₱ doz $2.00, 45@50%
Morrill's No. 1, $15.00 ..... 40&20%
No. 11, $15.00 ..... 40&10@40&10&5%
Nos. 3 and 4, $18.00 ..... 40&5%
No. 5, $24.00 ..... 40&5%
Leach's .. No. 0, $8.00; No. 1, $15 .. 15@20%
Nash's ..... 20&10@20&10&10
Hammer, Hotchkiss $5.50, 10%
Hammer, Bemis & Call Co.'s new Pat. ..... 30&5%
Bemis & Call Co.'s Lever and Spring Hammer ..... 30&5%
Bemis & Call Co.'s Plate 10%
Bemis & Call Co.'s Cross Cut 12½%
Aiken's Genuine ..... $13.00, 50&10@60%
Aiken's Imitation ..... $7.00, 55&5%
Hart's Pat. Lever 20%
Disston's Star 25%
Leopold ..... 40&10@50%
Atkin's Lever ..... ₱ doz No. 1, $6.00
Atkin's Criterion ..... ₱ doz No. 1, $6.00
Croissant (Keller), No. 1, $15.00; No. 2, $24.00 ..... 40&10%
Avery's Saw Set and Punch 50%
Kohler's Royal ..... ₱ doz $7.00
Kohler's Giant Royal ..... ₱ doz $12.00
Crescent ..... ₱ doz $3.00
Lloyd's Acme ..... ₱ doz $15, 40&10%
Taintor Positive ..... ₱ doz $18, 50%

Sharpeners, Knife—

Larkins'.
Applewood Handles .. ₱ doz. $6.00, 40%
Rosewood or Cocobola. ₱ doz. $9.00 40%

Shaves, Spoke—

Iron 45%
Wood 30%
Bailey's (Stanley R. & L. Co.) ..... 40&10%
Stearns' ..... 30&10%
Cincinnati ..... 25&10%
Goodell's ₱ doz. $9.00 ..... 25%

Shears—

American (Cast) Iron .. 75&10@75&10&5%
Barnard's Lamp Trimmers .. ₱ doz. $3.75
Seymour's, List Dec. 1881. 60&10&10@60&10&10&5%
Heinisch's, List Dec. 1881. 60&10&10@60&10&10&5
Heinisch's Tailor's Shears 33⅓%
Cast Steel Trimmers:
First quality ..... 80@80&10%
Second quality ..... 80&10@80&10&10%
Acme Cast Shears ..... 10&10%
Diamond Cast Shears 10%
Clipper ..... 10&10%
Victor Cast Shears .. 75&10@75&10&5%
Howe Bros. & Hulbert, Solid Forged Steel 40%
Hatch Cutlery Co., Solid Steel Forged .. 60%
Davenport Cutlery Co. ..... 60@60&10%
Clauss Shear Co., Japanned 70%
Clauss Shear Co., Nickeled, same list .. 60%
Galvanic 3½ to 9 in., ₱ doz. $1.00 ₱ inch
Electric Cutlery Co. ..... Net
Campbell Cutlery Co., Jap'd 75%
Nickel Plated 65%

Pruning Shears and Hooks

Disston's Combined Pruning Hook and Saw ..... ₱ doz. $18.00, 20&10%
Disston's Pruning Hook, ₱ doz. $12.00 ..... 20&10%
E. S. Lee & Co.'s Pruning Tools .. 50&10@70%
Pruning Shears, Henry's Pat., ₱ doz. $3.75@$4.00
Henry's Pruning Shears, ₱ doz. $4.25 @$4.50
Wheeler, M. & C. Co., Combination, ₱ doz $12.00, 20%
Dunlap's Saw and Chisel, ₱ doz $8.50, 30%
J. Mallinson & Co., No. 1, $5.25; No. 2, $7.35
P., S. & W. Co. 60%

Tinners', &c.—

Shears and Snips (P. S. & W.) ..... 20@25%
Snips, J. Mallinson & Co. 33⅓%

Sheaves—

Sliding Door—

M. W. Co., list July, 1888 .... 50&10@60&5%
R. & E., list Dec. 18, 1885 ..... 55&20%
Corbin's list ..... 60&10&2%
Patent Roller ..... 60&10&2%
Patent Roller, Hatfield's 75%
Russell's Anti-Friction, list Dec. 18, 1885 ..... 60&2%
Moore's Anti-Friction 50%

Sliding Shutter—

R. & E., list Dec. 18, 1885 ..... 60&10&2%
Sargent's list 70%
Reading list ..... 60&10&10%

Shells—

First quality 4, 8, 10 and 12 gauge ..... 25&10&2%
First quality Rival, Club and Climax brands, 14, 16 and 20 gauge ($7.50 list) ..... 20&10&2%
Prize ..... 40&2%
Star, Club, Rival and Climax Brands .. 33⅓&10&2%
Smokeless brand, 12, 10, 16 gauge. 33⅓&10&25
Trap brand, 12 and 10 gauge .. 33⅓&16&2%
Seibold's Comb. Shot Shells ..... 15&2%
Brass Shot Shells, 1st quality ..... 60&2%
Brass Shot Shells, Club, Rival, Climax. ..... 65&2%

Shells, Loaded—

Standard List, July 19, 1890 ..... 40&10&10@40&10&10&2%

Ship Tools—

L. & I. J. White ..... 20&5%

Shoes, Horse, Mule, &c.—

Horse—

Burden's, Perkins', Phœnix, Standard, Diamond State and Bryden's Boss, at factory $4.00
Bryden's Frog Pressure, at factory .. $5.00

Mule—

Add $1 ₱ keg to above prices.

Ox Wrought—

Ton lots ..... ₱ ℔ 9¢
1000 ℔ lots ..... ₱ ℔ 9½¢
500 ℔ lots ..... ₱ ℔ 10¢

Shot—

	Small lots.	
Drop, up to B, 25-℔ bag	$1.45	In ton lots a discount of 5¢ ₱ bag (25 ℔) is made.
Drop, up to B, 5-℔ bag	.35	
Drop, B and larger, 25-℔ bag	1.70	
Drop, B and larger, 5-℔ bag	.40	
Buck and Chilled, 25-℔ bag	1.70	
Buck and Chilled, 5-℔ bag	.40	
Dust Shot, 25-℔ bag	2.00	
Dust Shot, 5-℔ bag	.45	

Shovels and Spades—

Ames' Shovels, Spades, &c., list Nov. 1, 1885 ..... 20%
NOTE.—Jobbers frequently give 5@7½% extra on above.
Griffith's Black Iron ..... 50&10%
Griffith's C. S. ..... 60@60&10%
Griffith's Solid C. S. R. R. Goods 20%
St. Louis Shovel Co. ..... 20@20&7½%
Hussey, Binns & Co. ..... 15@25%
Hubbard & Co. ..... 20@20&7½%
Lehigh Mfg. Co. ..... 60&10%
H. M. Myers Co. 30%
Payne Pettebone & Son ..... 33⅓&5%
Remington's (Lowman's Pat.) .. 40&10@50%
Rowland's Black Iron ..... 50&10%
Rowland's Steel ..... 60&5@60&10%
Terra Haute Shovel & Tool Co. 25%

Shovels and Tongs—

Iron Head ..... 60&10@60&10&5%
Brass Head ..... 60&10&10%

Sieves—

Mann's Tin Rim ..... 50&35%
Buffalo Metallic, S. S. & Co. ..... 50&35%
Shaker (Barler's Pat.) Flour Sifters ₱ gr $18.00@$20.00
Electric ..... ₱ gr $17.00@$20.00
A. & W. Sifters ..... ₱ gr $18.00@$20.00
Hunter's ..... ₱ gr $18.00@$20.00

Sieves, Wooden Rim—

	Iron	Plated.
Mesh 18, Nested, ₱ doz	$0.80	$1.00
Mesh 20, Nested, ₱ doz	.95	1.10
Mesh 24, Nested, ₱ doz	1.15	1.35

Sinks, Wrought Steel—

Columbus, Painted or Unpainted ..... 30@30&10 %
Columbus, Galvanized and Enameled ..... 50@50&10 %
New Era, Painted ..... 40&10@50&5 %
New Era, Galvanized and Enameled ..... 60&10&10@70&5 %

Skeins, Thimble—

Western list ..... 75&5@75&10%
Columbus Wrt. Steel .. Special net prices
Coldbrookdale Iron Co. 60%
Seneca Falls Pattern 60%
Utica P. S. T. Skeins 60%
Utica Turned and Fitted 35%

Slates—

School, by case ..... 50&10@50&10&10%

Sleds, Hand—

Tubular Steel ..... ₱ doz $24.00 40&5%
(Lots of 6 doz 50%)

Snaps, Harness, &c.—

Anchor (T. & S. Mfg. Co.)....65%
Fitch's (Bristol)....50&10%
Hotchkiss....10%
Andrews....50%
Sargent's Patent Guarded....70&10&10%
German, new list....40&10%
Covert....50&10&5&2%
Covert, New Patent....50&10&5&2%
Covert, New R. E....60&10&5&2%
Covered Spring....60&10&10%
Covert's Saddlery Works' Triumph 33⅓%
John Frota Snaps....75@75&5%

Snaths, Scythe—

List....50@50&5%

Soldering Irons—

See *Irons, Soldering.*

Spittoons, Cuspidors, &c.

Standard Fiberware—

Cuspidors, 8¼-inch, ₱ doz., No. 5, $8; No. 6X, $6.
Spittoons, Daisy, 8-inch, No. 1, 4; 10 and 11 inch, $6.

Spoke Shaves—

See *Shaves, Spoke.*

Spoke Trimmers—

See *Trimmers, Spoke.*

Spoons and Forks—

Tinned Iron—

Basting, Cen. Stamp. Co.'s list....70&10%
Solid Table and Tea, Cen. Stamp. Co.'s list....70&10%
Buffalo, S. S. & Co....33⅓&2%

Silver Plated—

months or 5% cash 30 days:
Meriden Brit. Co., Rogers....40&15%
C. Rogers & Bros....40&15%
Rogers & Bros....40&15
Reed & Barton....40@40&5%
Wm. Rogers Mfg. Co....40, 15&5%
Simpson, Hall, Miller & Co....40, 15&5%
Holmes & Edwards Silver Co....40, 15&5%
L. Boardman & Son....50&12½%

Miscellaneous—

Holmes & Edwards Silver Co.:
No. 67 Mexican Silver....50&10&5%
No. 30 Silver Metal....50&10&5%
No. 24 German Silver....50&10&5%
No. 50 Nickel Silver....50&5%
No. 49 Nickel Silver....50&10&5%

Wm. Rogers Mfg. Co.:
Rogers' Silver Metal....50&10&5%
18% Rogers' German Silver....60&5%
22% Rogers' Nickel Silver....50&5%
German Silver....50@50&5%
German Silver, Hall & Elton..50&5% cash
Nickel Silver....50&5@50&10&5% cash
Britannia....60@60&5%
Boardman's Nickel Silver, list July 1, 1891....60&7½&5%
Boardman's Brittannia Spoons, case lots....60&5% cash

Springs—

Door—

Torrey's Rod, 39 in....₱ doz $1.20&1.2
Warner's No. 1, ₱ doz $1.50; No. 2, $3.40....55@55&10%
Gem (Coil), list April 19, 1886....10&15%
Star (Coil), list April 19, 1886...20@20&5%
Victor (Coil)....60&10@60&10&5%
Champion (Coil)....60&10@60&10&10%
Cowell's, No. 1, ₱ doz $18.00; No. 2, $15.00....50@50&10%
Rubber, complete, ₱ doz $4.50....55&10%
Hercules....50@50&10%

Carriage, Wagon, &c.—

Elliptic, Concord, Platform and Half Scroll....net prices
Cliff's Bolster Springs....25%

Squares—

Steel and Iron.....
Nickel-Plated.....85@85&5%
Try Square and T Bevels....60&10&10%
Disston's Try Square and T Bevels....50%
Winterbottom's Try and Miter....30&10%
Starrett's Micrometer Caliper Squares....25%
Avery's Flush Bevel Squares....40%
Avery's Bevel Protractor....50%

Squeezers—

Fodder—

Blair's....₱ doz $2.00
Blair's "Climax"....₱ doz $1.25

Lemon—

Porcelain Lined, No. 1....₱ doz $6.00....25&30%
Wood, No. 2....₱ doz $3.00, 35%
Wood, Common....₱ doz $1.70@1.75
Dunlap's Improved....₱ doz $3.75, 20%
Sammis....No. 1, $5.00; No. 2, $9; 12, $18 ₱ doz....25&10%
Jennings' Star....₱ doz $2.50
The Boss....₱ doz $2.50
Dean's...Nos. 1, ₱ doz $6.50; 2, $3.75; 3, $1.90; Queen, $2.50
Little Giant....50@50&5%
King....40&5%
Hotchkiss Straight Flash....₱ doz $12.00
Silver & Co., Glass....₱ gro. $9.00
Manny Lemon Juice Extractor:
Standard....₱ doz $0.75@$1.00
Improved....₱ doz $2.00

Standard Fiber Ware—

See *Ware, Standard Fiber.*

Staples—

Blind—

Barbed, ½ in. and larger....₱ ℔ 7@7¼¢
Barbed, ¾ in....₱ ℔ 8@8¼¢
Fence Staples, Galvanized. } Same price as Brb Wire
Fence Staples Plain.... } See Trd. Rep

Steelyards 40&10@50%

Stocks and Dies—

Blacksmith's:
Waterford Goods....35%
Butterfield's Goods....35%
Lightning Screw Plate....25@30%
Reece's New Screw Plates....25@30%
Reversible Ratchet....30%
Gardner....25%
Green River....25@30%

Stops, Bench—

Morrill's....₱ doz $9, 50%
Hotchkiss's....₱ doz $5, 10@10&10%
Weston's, No. 1, $10; No. 2, $9, 25&10&5%
McGill's, ₱ doz $3....10%
Cincinnati....25&10%
Terrell's Nos. 1 and 2, ₱ doz., $3; No. 3, $3.60....30%

Stone—

Stones, Grind—See *Grindstones.*

Scythe Stones—

Pike Mfg. Co., list April, 1892....33⅓%
Cleveland Stone Co., list Nov. 1892..33⅓%

Oil Stones, &c.—

Pike Mfg. Co:
Hindostan No. 1, ₱ ℔....8¢
Sand Stone....5¢ } 40@40&10%
Turkey Oil Stone, 4 to 8 in....80¢ } 10%
Turkey Slips....$2.00
Washita Stone, Extra....50¢
Washita Stone, No. 1....40¢
Washita Stone, No. 2....30¢
Washita Slips, Extra....80¢
Washita Slips, No. 1....70¢
Arkansas Stone, No. 1, 3 to 5½ in., $2.80 } 33⅓@33⅓&10%
Arkansas Stone, No. 1 5½ to 8 in. $3.50
Lake Superior....₱ ℔ 13¢
Lake Superior Slips....₱ ℔ 20¢

Stove Polish—

See *Polish, Stove.*

Stretchers, Carpet—

Cast Steel, Polished....₱ doz $2.2
Cast Iron, Steel Points....₱ doz 75@80¢
Socket....₱ doz $1.75
Bullard's....25@25&10%

Strops, Razor—

Genuine Emerson....60@60&5%
Imitation " ..₱ doz $2.00, 20&10&5%
Torrey's....20%
Badger's Belt and Com....₱ doz $2.00
Lamont Combination....₱ doz $4.00
Jordan's Pat. Padded, list Nov. 1, '89, 50%
Electric Cutlery Co....Net
Campbell Cutlery Co....Net

Stuffer, Sausage—

Miles' Challenge, ₱ doz $20....50@50&5%
Perry....₱ doz, No. 1, $15.00; No. 0, $21.00....50&5@50&10%
Draw Cut No. 4, each $30.00....20%
Enterprise Mfg. Co., list Jan 17, '93..25%
Silver's....40&10%

Sweepers, Carpet and Lawn—

Carpet—

Bissell No. 5....₱ doz $17.00
Bissell No. 8....₱ doz $20.00
Bissell, Grand....₱ doz $36.00
Standard....₱ doz $24.00
Domestic....₱ doz $21.00
Domestic, No. 2....₱ doz $22.00
Grand Rapids....₱ doz $24.00
Crown Jewel, No. 1, $18.00; No. 2, $19.00; No. 3, $20.00
Magic....₱ doz $15.00
Improved Parlor Queen, Nickeled....₱ doz $27.00
Japanned....₱ doz $24.00
Excelsior....₱ doz $22.00
Garland....₱ doz $18.00
Parlor Queen....₱ doz $24.00
Housewife's Delight....₱ doz $15.00
Queen....₱ doz $16.00
Queen, with band....₱ doz $18.00
King....₱ doz $30.00
Weed, Improved....₱ doz $18.00
Hub....₱ doz $16.00
Cog-Wheel....₱ doz $16.00
Ladies' Friend....₱ doz $15.00
Ladies' Friend No. 2....₱ doz $16.00
Advance....₱ doz $18.00
Our Leader....₱ doz $19.00
Triumph....₱ doz $20.00
Goshen....₱ doz $21.00
Supreme....₱ doz $22.00
Easy....₱ doz $22.00
Gilt Edge....₱ doz $24.00
Acme....₱ doz $26.00
Imperial....₱ doz $26.00
Grand Republic....₱ doz $30.00
Banner....₱ doz $22.00
The Star....₱ doz $21.00
Reliable....₱ doz $22.00
The Rapid....₱ doz $22.00
Our Own....₱ doz $27.00
Model....₱ doz $27.00

Goshen Sweeper Company, Grand Rapids, Mich., make the following rebates:
5 dozen in 6 months....₱ doz $1.00
10 dozen in 6 months....₱ doz $2.00
25 dozen in 6 months....₱ doz $3.00
Except on L.F., when 10 dozen price is $13.60, and 25 dozen $13.00.

Lawn—

Thompson Mfg. Co....30%

Swings—

Davies Lawn....25%

Tacks, Brads &c.—

List October 19, 1889. Old established straight Weights. Short Weight goods are sold at lower prices.

Carpet Tacks—
American, Blued....66⅔%
American, Tin'd and Cop'd....70%
Steel, Bright and Blued....66⅔%
Steel, Tinned and Coppered....70%
Swedes Iron, Blued....72½%
Swedes Iron, Tinned....75%
American Iron Tacks, Domestic.66⅔%
Swedes Iron Tacks—
S. S., Blued....66⅔%
S. S., Tinned....70%
Lanc., Blued....55%
Lanc., Tinned....60%
Gimp and Lace Tacks—
S. S., Blued....62½%
S. S., Tinned....66⅔%
Lanc., Blued....55%
Lanc., Tinned....60%
Basket and Trimmers' Tacks—
Lanc....52½%
S. S....60%
Hungarian Nails....60%
Common and Patent Brads....55%
Leathered Tacks....10%
Brush Tacks, S. S....60%
Looking Glass Tacks, S. S....35%
Picture-Frame Points, S. S....35%
Finishing Nails....60%
Trunk and Clout Nails—
Black....62½%
Tinned or Coppered....66⅔%
Basket Nails....60%
Chair Nails....52½%
Cigar Box Nails....45%
Tin Capped Nails....50%

Extra discount 25&2%

Miscellaneous—

Double Point....90@90&10%
Wire Carpet Nails....50&10%
Plymouth Rock Steel Carpet Tacks...25%
Upholsterers' Nails....40%

Wire Brads and Nails—

Steel-Wire Brads, R. & E. Mfg. Co.'s list 50&10%

See also *Nails, Wire.*

Tanks, Oil—

Emerald, S. S. & Co.: 30-gal. $8.75; 60-gal., $11 each....5&10%

Tapes, Measuring—

American....40@40&5%
Spring....40%
Chesterman's, Regular list....25@30%

Thermometers—

Tin Case....80@80&10%

Thimble Skeins—See *Skeins.*

Ties, Bale—Steel.

Standard Wire, list....50&10&5%

Tinners' Shears, &c —

See *Shears, Tinners' &c.*

Tinware—

Stamped, Japanned and Pieced, list Jan 20, 1887....70&10@70&25%

Tire Benders, Upsetters, &c.—See *Benders and Upsetters, Tire.*

Tobacco Cutters—

See *Cutters, Tobacco.*

Tools—

Coopers'—

Bradley's....20%
Barton's....20@20&5%
L. & I. J. White....20&5%
Albertson Mfg. Co....25%
Beatty's....30%
Sandusky Tool Co....30@30&5%
Shaves Cincinnati Tool Co....20%

Lumber—

Ring Peavies, "Blue Line"..₱ doz $20.00
Ring Peavies, Common....₱ doz $18.00
Steel Socket Peavies....₱ doz $21.00
Mail. Iron Socket Peavies...₱ doz $19.00
Cant Hooks, "blue Line"....₱ doz $16.00
Cant Hooks, Common Finish..₱ doz $14.00
Cant Hooks, Mall. Socket Clasp, "Blue Line" Finish....$16.00
Cant Hooks, Mall. Socket Clasp, Common Finish....₱ doz $14.50
Cant Hooks, Clip Clasp, "Blue Line" Finish....₱ doz $14.00
Cant Hooks, Clip Clasp, Common Finish....₱ doz $12.00
Hand Spikes....₱ doz 6 ft., $15.00; 8 ft., $20.00
Pike Poles, Pike & Hook, ₱ doz, 12 ft., $11.50; 14 ft., $12.50; 16 ft., $14.50; 18 ft., $17.50; 20 ft., $21.50.
Pike Poles, Pike only, ₱ doz, 12 ft., $10.00; 14 ft., $11.00; 16 ft., $13.00; 18 ft., $16.00; 26 ft., $20.00.
Pike Poles, not ironed, ₱ doz, 12 ft., $6.00; 14 ft., $7.00; 16 ft., $9.00; 18 ft., $12.00; 20 ft., $16.00.
Setting Poles, ₱ doz, 12 ft., $14.00; 14 ft., $15.00; 16 ft., $17.00.
Swamp Hooks....₱ doz $18.00

Saw—

Atkins', new list....40%

Transom Lifters—

See *Lifters, Transom.*

Traps—

Game—

Newhouse....40@40&5%
Oneida Pattern....70&10%
Game, Blake's Patent....40&10&5%

Mouse and Rat—

Mouse Wood, Choker, ₱ doz holes, 9@10¢
Mouse, Round Wire....₱ doz $1.50 10%
Mouse, Cage, Wire....₱ doz $2.50 10%
Mouse, Catch-'em-alive...₱ doz $2.50 15%
Mouse, Bonanza....₱ doz 0.90@$1.00
Rat, Decoy....₱ gr $10.00, 10%
Ideal....₱ gr $10.00
Cycione....₱ gr $5.25
Hotchkiss Metallic Mouse, 5-hole traps, ₱ doz., 75¢; in full cases, ₱ doz.60@65¢
Hotchkiss Imp. Rat Killer...₱ gro $18.50
Hotchkiss New Rat Killer...₱ gro $16.50
Schuyler's Rat Killer....₱ gro $15.00
Dandy....₱ doz., $1.75

Triers—

Butter and Cheese....25%

Trimmers, Spoke—

Bonney's....₱ doz $10.00, 50%
Stearns'....20&10%
Ives', No. 1, $15.00; No. 2, $12.00 ₱ doz....55&10%
Douglas'....₱ doz $9.00, 20%
Cincinnati....25%

Trowels—

Lothrop's Brick and Plastering....20&10&5@35%
Reed's Brick and Plastering....15%
Disston's Brick and Plastering.25@25&10%
Peace's Plastering....25@25&5%
Clement & Maynard's....20@20&5%
Rose's Brick....15@20%
Brade's Brick....25%
Worrall's Brick and Plastering....20%
Garden....70%
Cleves' Angle Trowel, ₱ gro, No. 1, $36; No. 2, $30; No. 3, $15. net @ 10%

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list....40%
Thompson Mfg. Co....25%

Tubes, Boiler—

See Pipe

Twine—

Flax Twine—

	BC.	B.
No. 9, ¼ and ⅜ ℔ Balls	24¢	21¢
No. 12, ¼ and ⅜ ℔ Balls	22¢	20¢
No. 18, ¼ and ⅜ ℔ Balls	20¢	20¢
No. 24, ¼ and ⅜ ℔ Balls	20¢	20¢
No. 36, ¼ and ⅜ ℔ Balls	18¢	20¢

No. 264 Mattrass, ¼ and ⅜ ℔ Balls, 55@54¢
Chalk Line, Cotton, ⅛ ℔ Balls....25¢
Mason Line, Linen, ⅛ ℔ Balls....55¢
2-Ply Hemp, ¼ and ⅜ ℔ Balls (Spring Twine)....15¢
3-Ply Hemp, 1 ℔ Balls....16@16¼¢
3-Ply Hemp, 1¼ ℔ Balls....15@15¼¢
Cotton Wrapping, 5 Balls to ℔..15@16¢
2, 3, 4 and 5 Ply Jute, ⅛ ℔ Balls....10¢
Wool....6¼@6¾¢
Paper....13@14¢
Cotton Mops, 6, 9, 12 and 15 ₱ to doz..18¢

Vises—

Solid Box....50&10@60%

Parallel—

Fisher & Norris Double Screw....15&10%
Stephens'....25@30%
Parker's....20@25%
Wilson's....55%
Howard's....40%
Bonney's....50%
Millers' Falls....40@40&10%
Trenton....40&5@40&10%
Merrill's....15@20%
Hollands'....35@40%
Sargent's....70&10%
Backus and Union....40%
Double Screw Leg....15&10%
Prentiss....20@25%
Simpson's Adjustable....40%
Moore's....20%
Massey Quick Action....20@25%

Saw Filers—

Bonney's, Nos. 2 & 3, $15.00....40&10%
Stearn's....33⅓&10@33⅓&10&10%
Stearn's Silent Saw Vises....33⅓@35%
Hopkins'....₱ doz $17.50, 10%
Reading....40&10%
Wentworth....20&10%

Miscellaneous—

Combination Hand Vises....₱ gr $42.00
Cowell Hand Vises....20%
Bauer's Pipe Vises....10%
Cincinnati....25&10%
Enterprise Pipe Vises, each....$3.00
Massey Combination Pipe....40%

Wads—Price Per M.

U.M.C.&W.R.A.—B. E., 11 up.. 68¢
U.M.C.&W.R.A.—B. E., 9&10.. 82¢
U.M.C.&W.R.A.—B. E., 8.... 96¢
U.M.C.&W.R.A.—B. E., 7.... $1.10
U.M.C.&W.R.A.—P. E., 11 up. 1.15
U.M.C.&W.R.A.—P. E., 9&10.. 1.50
U.M.C.&W.R.A.—P. E., 8.... 1.70
U.M.C.&W.R.A—P. E., 7.... 1.80
Dis. 30&2%
Eley's B. E., 11 and larger....$1.70@$1.75
Eley's P. E., 12 to 20.... 3.00@ 3.25

Wagon Boxes—

See *Boxes, Wagon.*

Wagon Jacks—

See *Jacks, Wagon.*

Ware, Hollow—

Cast Iron, Hollow—

Stove Hollow-Ware—
Ground....60&10@60&10&10%
Unground....65&10@70&5%
White Enameled Ware—
Maslin Kettles....70&10@75%
Boilers and Saucepans....60@60&5%
Tinned Boilers and S'pans....60@60&5%
Rustless Hollow Ware....50@50&5%
Gray Enameled Ware—
Stove....50%
Maslin Kettles....60&10&10%
Boilers and Saucepans....40&5%

Enameled—

Agate and Granite Ware, list Jan. 1, 1889....33⅓&10
Ironclad Enameled Ware....dis 33⅓&10

Kettles—

Galvanized Tea-Kettles—

Inch.....	6	7	8	9
Each....	55¢	60¢	65¢	75¢

Standard Fiber—

	Per Doz. Plain.	Decorated.
Wash-Basins, 10¼ in....	$1.80	2 00
Wash-Basins, 12 in....	2.00	2.50
Keelers, 11¼ in....		3.50
Cuspidors....		7.50
Spittoons, "Daisy," 8 in.	3.50	4.00
Peck Measure....	3.50	
Half-peck Measure....	3.00	

See also Pails.

Indurated Fiber.—

Spittoons No. 2, ₱ doz....$6.00
Basins, Ringed, ₱ doz., No. 2....2.80
Washtubs, Nested, Nos. 0, 1, 2 and 3 (4 pieces), ₱ nest....$5.75
Keelers Nested, Nos. 1, 2, 3 and 4 (4 pieces), ₱ nest....$2.55
Butter Bowls 15, 17 and 19-inch (3 pieces), ₱ nest....$1.50
Liquid Measures, pt., qt., 2 qt. and funnell (4 pieces), ₱ set....$1.20
Dis. 25%
See also Pails.

Silver Plated, Hollow—

4 mo. or 5% cash in 30 days.

Reed & Barton.... } 40&5%
Meriden Britannia Co.... } 40&5%
Simpson, Hall, Miller & Co.... } 40&5%
Rogers & Brother.... } 40&5%
Hartford Silver Plate Co.... } 40&5&5%
William Rogers Mfg. Co.... } 40&5&5%

Washers—

Size hole.... 5-16 ⅜ ½ ⅝ to 1¾
Washers.... 5¾ 4½ 3¾ 2¾
In lots less than 200 ℔, ₱ ℔, add ¼¢, 5-℔ boxes 1¢ to list.

Washer Cutters—

See *Cutters, Washers.*

Water Coolers—

See *Coolers, Water.*

Wedges—

Iron....₱ ℔ 3½¢
Steel....₱ ℔ 3½¢

Weights, Sash—

Solid Eyes....₱ ton $18.00@$19.00

Well Buckets Galvanized—See *Buckets, Well, Galvanized.*

Wheels, Well—

6 in., $2.00; 10 in. $2.50 12 in. $2.75

Whips

American Whip Co.: Length.	4½	5	5½	6	6½	7	7½	8 ft.
I. X. L. Whalebone Driving	$18.00	20.00	22.00	24.00	27.00	30.00	33.00	36.00
Eureka, Two-thirds Whalebone	....	....	15.00	16.50	18.00	20.00	....	....
Bull Bone, Half-length Whalebone	....	....	11.00	12.00	13.00	15.00	....	....
American Standard	8.00	8.50	9.50	10.50	12.00	13.50	15.00	16.50
True Grip, Raw Hide Center	6.00	6.00	6.50	7.00	7.50	9.00	....	....
New Name, Stocked Java, Black and Wine Colors	....	....	....	6.00	..	....	....	....
Americus, 93 Pen Whip	..	....	....	6.00	....	....	....	....
Gents' Light Driving No. 111	....	....	....	6.00	....	....	....	....
Gents' Light Driving No. 106	....	....	....	5.00	....	....	....	....
Hand-made Stocked Java No. 103	....	....	3.75	4.00	....	....	....	....

Per dozen.

A large variety of cheaper grades.....50¢@$3.00
Team Whips.....$2.00@$7.50
Toy Whips.....₩ gro. $2.50@$12.00
Hardware Assortment, 10/American, 75 Whips for $50.00.

Wire and Wire Goods—

Iron—

Market,
Br. & Ann., Nos.0 to 18. 75&10@75&10&5%
Cop'd, Nos. 0 to 18. 75&5%
Galv., Nos. 0 to 18. 70@5@70&10%
Tin'd, Tin'd list, Nos. 0 to 18..... .70@70&10%
Extra 10% often given.

Stone,
Br. and Ann'd, Nos. 16 to 18.....80%
Bright and Ann'd, Nos. 19 to 26.....80&5%
Br. and Ann'd, Nos. 27 to 36.....80&5&5%
Tinned.....65&10%
Extra 10% often given.

Tinned Broom Wire, 18 to 21, ₩ ℔....4½¢
Galvanized Fence.....75&10%
Brass, list Jan. 18, 1884.....40&5%
Copper, list Jan. 18, 1884.....40@5%
Annealed Wire on Spools.....60%
Malin's An'aled & Tin'd on Spools. .60&5%
Malin's Brass and Cop. on Spools. .50&5%
Tate's Spooled, Tin'd & Annealed. .60&5%
Tate's Spooled Cop. and Brass 50%
Cast Steel Wire.....50%
Stubs' Steel Wire.....$6.00 to 2, 30%
Steel Music Wire, 12 to 30, imported.... 60@70¢ ₩ ℔
Wire Clothes Line, see Lines.
Wire Picture Cord, see Cord.

Bright Wire Goods—

Standard list.....80&20@85%

Wire Cloth and Netting—

Painted Screen Cloth, good quality, ₩ 100 sq. ft., $1.40
Galvanized Wire Netting.....75@75&10%

Wire, Barb—

See Trade Report.

Wire Rope—See *Rope, Wire.*

Wrenches—

American Adjustable 40%
Baxter's Adjustable "S".....40&10@50%
Baxter's Diagonal.....60%
Coes' Genuine.....50&3%
Coes' "Mechanics'".....50&10&3%
Girard Standard.....65&10@70%
Lamson & Sessions' Engineers'....60&10%
Lamson & Sessions' Standard.....70&10%
P. S. & W. Agricultural.....
Girard Agricultural.....
Lamson & Sessions' Agric'l.. 75&10@80%
Whitman & Barnes Mfg. Co.

Bemis & Call's:
Pat. Combination.....40%
Merrick's Pattern.....35%
Brigg's Pattern.....25%
Cylinder or Gas Pipe.....40&5%
No. 3 Pipe.....50%
Aiken's Pocket (Bright).....$6.00, 50&10%
The Favorite Pocket.....₩ dos., $4.00, 40%
Webster's Pat. Combination.....25%
Boardman's.....30%
Always Ready.....25&2%
Alligator.....50%
Donohue's Engineer.....30&10%
Eagle.....50&10%
Acme, Bright.....50&2%
Acme, Nickeled.....40&2%
Hercules.....70@70&5%
Walker's.....55&2%
Diamond Steel.....55&2%
Cincinnati Brace Wrenches.....25&10%
Tafts' Vise Wrench.....55&10&2%

Wringers, Clothes—

Am. Wringer Co.'s list, Jan. 2, '93..2% cash
Colby WringerCo., list Sept. 1, '91..2% cash
Lovell Mfg. Co., list Jan. 1, 1892..2% cash
Peerless Mfg. Co., list Feb., 1892..2% cash
National Wringer & Mfg. Co., list June 1, 1892.....2% cash

Wrought Goods—

Staples, Hooks, &c., list March 17, 1892 85&10@85&10%

Paints, Oils and Colors.—Wholesale Prices.

Animal and Vegetable Oils—

Linseed, City, raw.. per gal.	..	@	48
Linseed, City, boiled	..	@	51
Linseed, Western, raw	..	@	48
Lard, City, Extra Winter	..	@	1.10
Lard, City, Prime	1.05	@	1 10
Lard, City, Extra No. 1	75	@	80
Lard, City, No. 1	65	@	70
Lard, Western, prime	1.00	@	1.05
Cotton-seed, Crude, prime	57	@	58
Cotton-seed, Crude, off grades	53	@	55
Cotton-seed, Summer Yellow, prime	63	@	65
Cotton-seed, Summer Yellow, off grades	60	@	62
Sperm, Crude	..	@	95
Sperm, Natural Spring	..	@	..
Sperm, Bleached Spring	..	@	..
Sperm, Natural Winter	1.00	@	1.03
Sperm, Bleached Winter	1.05	@	1.08
Whale, Crude	..	@	..
Whale, Natural Winter	..	@	55
Whale, Bleached Winter	..	@	58
Whale, Extra Bleached	..	@	60
Sea Elephant, Bleached Winter	..	@	..
Menhaden, Crude, Sound	40	@	..
Menhaden, Crude, Southern	..	@	..
Menhaden, Light Pressed	42	@	43
Menhaden, Bleached W'ter	45	@	..
Menhaden, Extra Bleached	48	@	..
Tallow, City, prime	70	@	75
Tallow, Western, prime	65	@	70
Cocoanut, Ceylon	6½	@	6¾
Cocoanut, Cochin	7	@	7¼
Cod, Domestic	38	@	40
Cod, Foreign	40	@	45
Red Elaine	40	@	45
Red Saponified	7½	@	8
Bank..... per gal	40	@	41
Straits	41	@	42
Olive, Italian, bbls	65	@	70
Neatsfoot, prime	70	@	80
Palm, prime, Lagos ₩ ℔	6	@	6¼

Mineral Oils—

Black, 29 gravity, 25 @ 30 cold test..... per gal	7	@	7½
Black, 29 gravity, 15 cold test	7½	@	8
Black, 29 gravity, summer	6	@	6½
Cylinder, light, filtered	14	@	16
Cylinder, dark, filtered	10	@	13
Paraffine, 23½ @ 24 gravity	11	@	12
Paraffine, 25 gravity	10	@	11
Paraffine, 28 gravity	7½	@	8
Paraffine, red	1½	@	10½

Paints and Colors—

Barytes, Foreign, ℔ ton	$22.00	@	24.00
Barytes, Amer. floated	29.00	@	32.00
Barytes, Amer. No. 1	16.00	@	18.00
Barytes, Amer. No. 2	13.00	@	15.00
Barytes, Amer. No. 3	11.00	@	12.00
Blue, Celestial	₩ ℔ 6	@	8
Blue, Chinese	40	@	50
Blue, Prussian	25	@	40
Blue, Ultramarine	8	@	25
Brown, Spanish	½	@	1.
Brown, Vandyke, Amer	3	@	3½
Brown, Vandyke, English	6	@	8
Carmine, No. 40, in bulk	3.10	@	..
Carmine, No. 40, in boxes or barrels	3.20	@	..
Carmine, No. 40, in ounce bottles	4.20	@	..
Chalk, in bulk	₩ ton. 2.00	@	....
Chalk, in bbls.	₩ 100 ℔ 33	@	40
China Clay, English	₩ ton. 13.00	@	18.00
Cobalt Oxide, prep'd	9.00	@	11.00
Cobalt Oxide, black, lots 100 ℔.	1.90	@	....
Cobalt Oxide, black, less 100 ℔.	1.96	@	....
Green, Paris, in bulk	10	@	10½
Green, Paris, 170 @ 175 ℔ kegs	10½	@	11
Green, Paris, small pack.	12	@	17
Green, Chrome, ordinary	6	@	12
Green, Chrom'n, pure	22	@	25
Lead, Eng., B.B. white	8½	@	10
Lead, Amn. White, dry or in oil: Kegs, lots less than 500 ℔	7	@	7¼
Kegs, lots 500 ℔ to 5 tons	6¼	@	6¾
Kegs, lots 5 tons to 12 tons	6¾	@	6⅞
Kegs, lots 12 tons and over	6¼	@	6½
Lead, White, in oil, 25 ℔ tin pails, add to keg price	..	@	⅛
Lead, White, in oil, 12½ ℔ tin pails, add to keg price	..	@	1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price	..	@	2¼
Lead, Red, bbls. and ½ bbls	6	@	7
Lead, Red, kegs	6¼	@	7½
Litharge, kegs	6¼	@	7¼
Litharge, bbls. and ½ bbls	6	@	7

Terms, &c.—Lead and Litharge.—On lots of 500 ℔ or over, 60 days' time or 2½ % discount for cash if paid within 15 days of date of invoice.

Ocher, Rochelle	1.35	@	1½
Ocher, French Washed	1½	@	2½
Ocher, German Washed	1½	@	3
Ocher, American	½	@	1½
Orange Mineral, English	8½	@	9
Orange Mineral, French	10	@	10½
Orange Mineral, German	8½	@	9
Orange Mineral, American	8½	@	8¾
Paris White, English Cliff-stone	1.00	@	1.15
Paris White, American	65	@	75
Red, Indian, English	5½	@	7
Red, Indian, American	2	@	6½
Red, Turkey	9	@	14
Red, Tuscan	9	@	11
Red, Venetian, American ₩ 100 ℔	1.00	@	1.10
Red, Venetian, English	1.20	@	1.35
Sienna, Italian, Burnt and Powd. ₩ ℔	4	@	5
Sienna, Ital., Burnt Lumps	1½	@	3½
Sienna, Ital., Raw, Powd	4½	@	5½
Sienna, Ital., Raw, Lumps	1½	@	3½
Sienna, American, Raw	1½	@	1¾
Sienna, American, Burnt and Powdered ₩ ℔	1½	@	1¾
Talc, French	..	@	1½
Talc, American	1½	@	1¾
Terra Alba, Fr'ch. ₩ 100 ℔	95	@	1.25
Terra Alba, English	70	@	80
Terra Alba, American No. 1	65	@	75
Terra Alba, American No. 2	45	@	50
Umber, Turkey, Burnt and Powdered ₩ ℔	3½	@	4
Umber, Turkey Bnt. Ln	2½	@	3
Umber, Turkey, Raw and Powdered	3½	@	....
Umber, Turkey, R'w Lumps	2½	@	2¾
Umber, Turkey, Bnt. Amer	1½	@	1¾
Umber, Turkey, R'w Amer	1½	@	1¾
Yellow, Chrome	10	@	25
Vermillion, American Lead	11½	@	12
Vermillion, Quicks'er, bulk	57	@	..
Vermillion, Quicks'er, bags	58	@	..
Vermillion, Quicksilver sm'r pkgs	62	@	..
Vermillion, English Import	85	@	90
Vermillion, Imitation, Eng	8	@	35
Vermillion, Trieste	90	@	92½
Vermillion, Chinese	92½	@	95
Whiting Common, ₩ 100 ℔	37½	@	42½
Whiting Gliders'	45	@	55

Zinc, American, dry ₩ ℔	4½	@	..
Zinc, French, Red Seal	7½	@	..
Zinc, Frech, Green Seal	9	@	..
Zinc, Frech, V. M. X	..	@	7
Zinc, Antwerp, Red Seal	7½	@	..
Zinc, Antwerp, Green Seal	7¾	@	..
Zinc, German, L. Z. O	6¾	@	7¾
Zinc, V. M. in Poppy Oil, G. Seal, lots of 1 ton and over	10¾	@	11¼
lots less than one ton	11	@	11¾
Zinc, V. M. in Poppy Oil, Red Seal	..	@	..
lots of 1 ton and over	10	@	10¼
lots of less than 1 ton	10¼	@	10¾

Discounts.—French Zinc.—Discounts to buyers of 10 bbl. lots of one or assorted grades, 1%; 25 bbls., 2%; 50 bbls. 4%. No discount allowed on less than bbl. lots.

Colors in Oil—

Black, Drop, Frankfort	25	@	30
Black, Drop, English	12	@	15
Black, Drop, Domestic	7	@	10
Black, Lampblack, Best	20	@	35
Black, Lampblack, Common	7	@	12
Black, Ivory	8	@	15
Blue, Chinese	35	@	40
Blue, Prussian	20	@	45
Blue, Ultramarine	12	@	18
Brown, Vandyke	7	@	12
Green, Chrome	8	@	13
Green, Paris	16	@	18¼
Sienna, Raw	7	@	14
Sienna, Burnt	7	@	14
Umber, Raw	7	@	10
Umber, Burnt	7	@	10

Putty—

In barrels and ⅛ bbls	.01¾	@	.01¾
In tubs	.01¾	@	.01¾
In tin cans	.01¾	@	.02¼
In bladders	.01¾	@	.02¼

Spirits Turpentine—

In regular bbls	..	@	35¼
In machine bbls	..	@	35¼

Glue—

Low Grade ₩ ℔	8	@	10
Cabinet	12	@	14
Medium White	13	@	15
Extra White	17	@	20
French	10	@	22
English	10	@	15
Irish	12	@	..

Pacific Coast Representatives, CHAS. L. PIERCE & CO., 202 Market St., San Francisco, Cal.
Canadian Representative, H. D. SIMMONS, 85 York St., Toronto, Ont.

CURRENT METAL PRICES.

FEBRUARY 22, 1893.

The following quotations are for small lots. Wholesale prices, at which large lots only can be bought, are given elsewhere in our weekly market report.

IRON AND STEEL—

Bar Iron from Store—

Common Iron:	
¼ to 2 in. round and square.. 1 to 6 in. x ⅜ to 1 in....	₩ ℔ 1.90 @ 2.00
Refined Iron:	
¼ to 2 in. round and square. 1 to 4 in. x ⅜ to 1¼ in.... 4¼ to 6 in. x ⅜ to 1 in.	₩ ℔ 2.00 @ 2.10
1 to 6 in. x ¼ and 5-16	₩ ℔ 2.20 @ 2.30
Rods—¾ and 11-16 round and sq.	₩ ℔ 2.10 @ 2.20
Bands—1 to 6 x 3-16 to No. 12	₩ ℔ 2.30 @ 2.40
"Burden Best" Iron, base price.	₩ ℔ 3.00
Burden's "H. B. & S." Iron, base price	₩ ℔ 2.80
"Ulster"	₩ ℔ 3.00
Norway Bars	3.75 @ 4.00
Norway Shapes	4.50 @ 5.00

Merchant Steel from Store—

	Per ℔
Open-Hearth and Bessemer Machinery, Toe Calk, Tire and Sleigh Shoe, base price in small lots	2¾¢
Best Cast Steel, base price in small lots.	8 ¢
Best Cast Steel Machinery, base price in small lots	5 ¢

Sheet Iron from Store—

Black—

	Common American.	R. G. Cleaned American.
Nos. 10 to 16	₩ ℔ 2¾ @	3⅝¢
17 to 20	₩ ℔ 3 @	3¾¢
21 to 24	₩ ℔ 3¼ @	3⅞¢
25 and 26	₩ ℔ 3⅜ @	3¾¢
27	₩ ℔ 3½ @	3¾¢
28	₩ ℔ 3⅝ @	4 ¢
American B. B.	₩ ℔ 4¢ @ 4½¢	

Russia, Planished, &c.

Genuine Russia, according to assortment	₩ ℔ 12¢ @ 13¢
Patent Planished	₩ ℔ A, 10¢; B, 9¢, 5%
Craig Polished Sheet Steel	₩ ℔, 8½¢

Galvanized.

	B. B.
Nos. 16 to 16	₩ ℔ 4.20¢
17 to 22	₩ ℔ 4½¢
23 to 24	₩ ℔ 4¾¢
25 to 26	₩ ℔ 5 ¢
27	₩ ℔ 5¼¢
28	₩ ℔ 5½¢
29 to 30	₩ ℔ 6½¢

English Steel from Store—

Best Cast	₩ ℔ 15 ¢
Extra Cast	₩ ℔ 16½ @ 17 ¢
Swaged, Cast	₩ ℔ 16 ¢
Best Double Shear	₩ ℔ 15 ¢
Blister, 1st quality	₩ ℔ 12 ¢
German Steel, Best	₩ ℔ 10 ¢
2d quality	₩ ℔ 9 ¢
3d quality	₩ ℔ 8 ¢
Sheet Cast Steel, 1st quality	₩ ℔ 15 ¢
2d quality	₩ ℔ 14 ¢
3d quality	₩ ℔ 12½¢
R. Mushet's "Special"	₩ ℔ 48 ¢
" " Annealed	₩ ℔ 75 ¢
" "Titanic"	₩ ℔ 20 ¢

METALS—

Tin—

	Per ℔
Banca, Pigs	22 ¢
Straits, Pigs	21½¢
Straits in Bars	23 ¢

Tin Plates—

Duty: 2.2¢ ₩ ℔.

Charcoal Plates—Bright—

Guaranteed Plates command special prices, according to quality. Per box.

Melyn and Calland Grade.	IC, 10	x14..	@ $6.50
" " "	IC, 12	x12..	@ 6.75
" " "	IC, 14	x20..	@ 6.50
" " "	IC, 20	x28..	@ 13.00
" " "	IX, 10	x14..	@ 8.50
" " "	IX, 12	x12..	@ 8.75
" " "	IX, 14	x20..	@ 8.50
" " "	IX, 20	x28..	@ 17.00
" " "	DC, 12½	x17..	@ 6.00
" " "	DX 12½	x17..	@ 8.00
Allaway Grade	IC, 10	x14..	@ 6.00
" "	IC, 12	x12..	@ 6.25
" "	IC, 14	x20..	@ 6.00
" "	IC, 20	x28..	@ 12.00
" "	IX, 10	x14..	@ 7.50
" "	IX, 12	x12..	@ 7.75
" "	IX, 14	x20..	@ 7.50
" "	IX, 20	x28..	@ 15.00
" "	DC, 12½	x17..	@ 5.50
" "	DX 12½	x17..	@ 7.00

Coke Plates—Bright—

Steel Coke.—IC, 10 x 14, 14 x 20..	$5.60	@ $5.60
10 x 20..	....	@ 8.50
20 x 28..	11.50	@ 12.00
IX, 10 x 14, 14 x 20..	....	@ 7.00
BV Grade.—IC, 10 x 14, 14 x 20..	....	@ 5.60

Charcoal Plates—Terne—

Guaranteed Plates command special prices according to quality.

Dean Grade.—IC, 14 x 20	....	@ $5.75
20 x 28	11.00	@ 11.25
IX, 14 x 20	....	@ 6.50
20 x 28	....	@ 13.00
Abecarne Grade.—IC, 14 x 20	....	@ 5.65
20 x 28	....	@ 11.00
IX 14 x 20	....	@ 6 50
20 x 28	....	@ 13.00

Tin Boiler Plates—

AXA, 4x 26.....112 sheets	@ $13.35
IXX, 14 x 28.....112 sheets	@ 14.50
IXX, 14 x 31.....112 sheets	@ 16.00

American Terne Plates.—Apollo.

IC, 14 x 20	$6.25
IC, 20 x 28	12.50
IX, 14 x 20	7.25
IX, 20 x 28	14.50

Copper—

DUTY: Pig, Bar and Ingot, 1¼¢; Old Copper, 1¢ ₩ ℔. Manufactured (including all articles of which Copper is a component of chief value), 35 % ad valorem.

Ingot—

Lake	@ 13 ¢
Ansonia grade Arizona	@ 12½¢
Ansonia grade Casting	@ 12 ¢

Sheet and Bolt—

Prices adopted by the Association of Copper Manufacturers of the United States, May 19, 1892. Subject to a discount of 15 % @ 25 %, according to size of order.

Not wider than	Not longer than	And longer than	Over 64 oz.	32 to 64 oz.	16 to 32 oz.	14 to 16 oz.	12 to 14 oz.	10 to 12 oz.	8 to 10 oz.	Less than 8 oz.
			Weights per sq. foot and prices per pound.							
90	72		22	22	22	23	24	25	28	30
90		72	22	22	22	23	25	27	31	....
96	96		22	22	22	24	26	30	33	....
96		96	22	22	23	25	27	31	35	...
48	96		22	22	24	26	28	32	....	....
48		96	22	22	25	27	29	33	....	....
60	96		22	22	27	29	34	....	....	....
60		96	22	23	28	....	....	....	....	....
84	96		23	24	....	....	....	....	....	....
84		96	24	25	....	....	....	....	....	....
Ov'r 84 in. wide			25	27	....	....	....	....	....	....

Bolt Copper, ⅝ inch diameter and over, per pound 22¢

Circles, Segments and Pattern Sheets, 60 in. diameter and less, 3¢ ₩ ℔ advance over prices of Sheet Copper required to cut them from.

Circles, Segments and Pattern Sheets, over 60 in. diameter, up to 96 in. diameter inclusive, 4¢ ₩ ℔ advance over prices of Sheet Copper required to cut them from.

Circles, Segments and Pattern Sheets, over 96 in. diameter, 5¢ ₩ ℔ advance over prices of Sheet Copper required to cut them from.

Cold or Hard Rolled Copper 14 oz. ₩ square foot and heavier, 1¢ ₩ ℔ over the foregoing prices.

Cold or Hard Rolled Copper lighter than 14 oz. ₩ square foot, 2¢ ₩ ℔ over the foregoing prices.

All Polished Copper over 20 in. wide, 2¢ ₩ ℔ advance over the foregoing prices.

Copper Bottoms, Pits and Flats—

	Per ℔.
14 ounce to square foot and heavier	26¢
12 ounce and up to 14 ounce to square foot	27¢
10 ounce and up to 12 ounce	29¢
Lighter than 10 ounce	32¢

Circles less than 8 inches diameter, 2¢ ₩ ℔ additional.

Circles over 13 inches diameter are not classed as Copper Bottoms.

10 %@ 20 % discount, according to size of order.

Copper Wash Bowl Bottoms—

Tinned ₩ ℔ 34¢, 10% @ 20%

Tinning—

Net.

Tinning sheets on one side, 10, 12 and 14 x 48 each	8¢
Tinning sheets on one side, 30 x 60 each	30¢
For tinning boiler sizes, 9 in. (sheets 14 in. x 60 in.), each	15¢
For tinning boiler sizes, 8 in. (sheets 14 in. x 56 in.), each	12¢
For tinning boiler sizes, 7 in. (sheets 14 in. x 52 in.), each	12¢
Tinning sheets on one side, other sizes, per square foot	2½¢
For tinning both sides double the above prices.	

Planished Brass and Copper—

Not larger than 30 x 60.

16 oz. and heavier	24¢ ₩ ℔
14 oz.	25¢ ₩ ℔
12 oz.	27¢ ₩ ℔

Seamless Brass Tubes—

July 6, 1892. Net.

O. G.	N. G.	⅜	½	⅝	¾	⅞	1	1⅛
8-14	6-12	32	28	25	24	23	22	19
15	13	33	28	26	25	24	23	20
16	14	34	29	27	26	25	24	20
17	15	35	30	28	27	26	25	21
18	16	37	31	29	27	26	25	22
19	17	38	32	30	29	28	27	24
20	18-19	39	34	32	31	30	29	26
21	20	41	36	34	33	32	31	29
22	21	43	37	35	34	33	32	31
23	22	45	39	37	36	35	34	34
24	23	48	41	39	38	36	35	36
25	24	51	44	41	40	39	38	40

Copper, Bronze and Gilding Tube, 3¢ ₩ ℔ additional

Brazed Brass Tubing. (To No. 20 inclusive.)

Above 5-16 inch to 3 inch, inclusive	35¢
Plain, above 3 inch	45¢
Plain, 5-16 inch	45¢
Plain, ¼ inch	60¢
Plain, 3-16 inch	$1.00
Plain, ⅛ inch	$1.50
Fancy Tubing, Brass, to No. 20, inclusive	43¢ ₩ ℔
Bronze Tubing, 3¢ ₩ ℔ more than Brass.	
Discount from list	30 @ ..%

Roll and Sheet Brass—

(Brown & Sharpe Standard Gauge.)

Common High Brass: Wider than and including	in. 2	in. 10	in. 12	in. 14	in. 16	in. 18	in. 20	in. 22
	10	12	14	16	18	20	22	24
To No. 20, inclusive	.21	.22	.23	.25	.27	.29	.31	.33
Nos. 21, 22, 23 and 24	.22	.23	.24	.26	.28	.30	.32	.34
Nos. 25 and 26	.22½	.23½	.24½	.27	.29	.31	.33	.35
Nos. 27 and 28	.23	.24	.25	.28	.30	.32	.34	.36

Common High Brass: Wider than and including	in. 24	in. 26	in. 28	in. 30	in. 32	in. 34	in. 36	in. 38	in. 40
	26	28	30	32	34	36	38	40	
To No. 20, inclusive	.36	.39	.42	.46	.50	.55	.60	.65	
Nos. 21, 22, 23 and 24	.37	.40	.43	.47	.51	.56	.61	.66	
Nos. 25 and 26	.38	.41	.44	.48	.52	.57	.63	.71	
Nos. 27 and 28	.39	.42	.45	.49	.53	.58	.65	.75	

Discount from List 10 % to 25 %.

Brass and Copper Wire—

List January 17, 1884.

Numbered by Stubs' gauge.	Soft & hard high brass.	Spring high brass.	Low brass.	Copper.
All Nos. to No. 16, inclusive	$0.22	$0.24	$0.26	$0.30
No. 17 and No. 18	.23	.25	.27	.31
No. 19 and No. 20	.24	.26	.28	.32
No. 21, or 0.032 diameter	.25	.27	.29	.33

Discount 15 % to 25 %.

Fine Numbers.

Numbered by London gauge.	Brass.	Spring high brass.	Low brass.	Copper.
No. 22	$0.26	$0.28	$0.30	$0.34
No. 23	.24	.30	.32	.36
No. 24	.30	.32	.34	.38
No. 25	.32	.34	.36	.40
No. 26	.35	.37	.39	.43
No. 27	.38	.40	.42	.46
No. 28	.42	.44	.46	.51
No. 29	.45	.47	.49	.54
No. 30	.48	.50	.52	.6[illegible]
No. 31	.51	.53	.55	.67
No. 32	.55	.57	.59	.73
No. 33	.59	.61	.63	.82
No. 34	.64	.66	.68	.95
No. 35	.70	.72	.74	1.30
No. 36	.76	.78	.80	1.50
No. 37	1.00	1.02	1.04	1.70
No. 38	1.30	1.32	1.34	2.00
No. 39	2.00	2.02	.00	3.50
No. 40	2.60	2.6[illegible]	.60	5.75

—% discount.

Spring Wire, 2¢ ₩ ℔ advance.

Copper Belt and Hose Rivets and Burrs—

	Per ℔.		Per ℔.
No. 5	49¢	No. 11	56¢
No. 6	49¢	No. 12	58¢
No. 7	49¢	No. 13	60¢
No. 8	50¢	No. 14	65¢
No. 9	52¢	No. 15	70¢
No. 10	54¢		

60 % @ 5 % discount.

Tobin Bronze—Rods.

Drawn Rods for Bolts, Forgings, &c.

¼ to 3½ inches inclusive	17¢ ₩ ℔
Over 3½ to 5 inches inclusive	18¢ ₩ ℔

Piston Rods, Finished True, Smooth and Straight.

¼ to 3½ inches inclusive	18¢ ₩ ℔
Over 3½ to 5 inches inclusive	19¢ ₩ ℔

Spelter—

Duty: Pig, Bars and Plates, $1.50 ₩ 100 ℔.	
Western Spelter	5¢ @ 5¼¢
Bertha (pure)	8¢ @ 9¼¢

Zinc—

Duty: Sheet, 2½¢ ₩ ℔.	
600 ℔ casks	6¾¢
Per ℔	7 ¢

Lead—

Duty: Pig, $2 ₩ 100 ℔. Old Lead, 2¢ ₩ ℔. Pipe and Sheets, 2½¢ ₩ ℔.	
American Pig	4.2 ½ @ 4.50¢
Bar	4¾¢
Pipe, subject to discount 20%	6¼¢
Tin-Lined Pipe, subject to discount 20%	15¢
Block Tin Pipe, subject to discount 20%	37½¢
Sheet, subject to discount 20%	7¢
Old Lead in exchange, 3¼¢ ₩ ℔.	

Solder—

½ @ ½ (Guaranteed)	13½¢ @ 15¢
No. 1	11¾¢ @ 12½¢

Prices of Solder indicated by private brands vary according to composition.

Antimony—

Cookson	₩ ℔ 12½¢
Hallett's	" 10¾¢ @ 11 ¢

Aluminum—

Duty: 15¢ ₩ ℔.	
Guaranteed over 98½% pure	₩ ℔ .75
Guaranteed 94½@98½% pure	₩ ℔ .65
Lots under 100 ℔	5¢ ₩ ℔ additional

Old Metals—

Prices Paid in New York.

Heavy Copper	₩ ℔ 10 ¢
Light and Tinned Copper	₩ ℔ 9 ¢
Heavy Brass	₩ ℔ 7 ¢
Light Brass	₩ ℔ 6 ¢
Lead	₩ ℔ 3¼¢
Tea Lead	₩ ℔ 3½¢
Zinc	₩ ℔ 2½¢
No. 1 Pewter	₩ ℔ 14 ¢
No. 2 Pewter	₩ ℔ 7 ¢
Wrought Scrap Iron	₩ gross ton $17.00
Heavy Cast Scrap	₩ gross ton 10.00
Stove Plate Scrap	₩ gross ton 7.00
Burnt Iron	₩ gross ton .500